To: Hanson, Joshua[joshua.hanson@sol.doi.gov]

From: Bilbao, Anita

Sent: 2017-08-31T13:23:34-04:00

Importance: Normal

Subject: Fwd: GSENM Requested Maps

Received: 2017-08-31T13:24:40-04:00

GSENM List of Historic and Scientific Objects of Interest.xlsx

GSENM DOIMemo 11.06.1998.pdf

GSENM publications as of April 2016 Final.xlsx

2 of 3

----- Forwarded message -----

From: Betenson, Matthew < mbetenso@blm.gov >

Date: Wed, Aug 30, 2017 at 12:16 PM Subject: Re: GSENM Requested Maps To: Edwin Roberson <eroberso@blm.gov>

<<u>cstaszak@blm.gov</u>>

Good morning Ed,

Attached is a set of documents to help with questions about Grand Staircase-Escalante National Monument's (GSNEM) object list and research work. The Memorandum from the Secretary to the BLM (GSENM DOIMemo 11.06.1998) clearly identified the List of Historic and Scientific Objects of Interest and it is broken into Geologic, Prehistoric, Historic, and Biological categories. This Memo also contains the Bibliography of Sources Concerning Objects. We consider these lists definitive for the establishment of GSENM. We also attached a separate spreadsheet of GSENM List of Historic and Scientific Objects of Interests from the Memo for easier copying and sharing.

This monument is almost 21 years old at this point, on-going research has provided additional information about some of objects, and resources contained within GSENM. Currently we have 604 entries of specific research at GSENM (GSENM publications as of April 2016 Final).

We are working on an updated/highlights list reflecting more the research and results that has occurred on GSENM objects. I expect to be able to send that early this afternoon.

Please let me know if you have any questions or need more information.

On Tue, Aug 29, 2017 at 5:04 PM, Betenson, Matthew <mbetenso@blm.gov> wrote:

Good afternoon Ed,

To answer that question about the Paleo data, this map depicts the correct site potential information. It is from May, and I believe Brian and Paul (GSENM GIS) discussed the data for it in March.

The map was part of the initial data request on the Google Drive:

https://drive.google.com/drive/folders/0B thpQJXu6O-SEtVLTc2NVMtVm8

We'll have the other information ready for you tomorrow.

On Tue, Aug 29, 2017 at 8:47 AM, Edwin Roberson < eroberso@blm.gov > wrote:

Matt, I wanted to share the maps i sent back to D.C. As my note indicates, We will be overlaying the data themes on one map. Ed

Sent from my iPhone

Begin forwarded message:

From: "Roberson, Edwin" < eroberso@blm.gov>

Subject: Fwd: GSENM Requested Maps

Here are maps with some of the individual data layers you were looking for. The first is Wilderness Study Areas. The second is Lands with Wilderness Character. There is still some project related LWC inventory work being done in the southwest portion of the monument so it will change. The last two maps show oil and gas and coal leases at the time the monument was established. We are will get mineral potential information tomorrow. The last map shows polygons depicting the landscape features/objects listed in the proclamation. Here are the objects/features.





When we get the mineral info we can produce a map with all four layers you requested. ed

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Ed Roberson,

Utah BLM State Director Office Phone: 801-539-4010 Cell Phone: 801-641-3846 Website: https://www.blm.gov/utah

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Matt Betenson

Associate Monument Manager

Grand Staircase-Escalante National Monument 669 South HWY 89A, Kanab, UT 84741 435-644-1205 435-644-1250 fax

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Matt Betenson

Associate Monument Manager

Grand Staircase-Escalante National Monument 669 South HWY 89A, Kanab, UT 84741 435-644-1205 435-644-1250 fax --

Anita Bilbao Associate State Director Bureau of Land Management - Utah 801-539-4010 (o) 385-315-1211 (c) https://www.blm.gov/utah

Grand Staircase-Escalante National Monument List of Historic and Scientific Objects

| Object | Description | Location | Source |
|----------|---|--------------------------|--|
| | Perennial streams enter entrenched canyons in | | |
| | white Navajo and deep-red Windgate | | |
| | Sandstone. Deer Creek, Steep Creek, and The | | |
| | Gulch have perennial flows of clear, cold | | |
|)(5) DPP | water. The Gulch leads up into the spectacular | | |
| | Circle Cliffs where remarkable specimens of | | |
| | petrified wood (60 ft logs) exist in the | Escalante - Stepp | UT BLM Statewide Final |
| | Morrison and Chinle formations. White Canyon cuts through the Kaibab | Creek WSA | Wilderness EIS, 1990 of the Circle Cliffs Area, |
| | Limestone to the Coconino Sandstone, the | | Garfield and Kane |
| | oldest stratum in the Upper Escalante | Escalante-Studhorse | Counties, Utah, 1967. p. |
| | drainage | Peaks Unit | 10. |
| | Big Spencer Flat Road and V Road is site of | | Environmental Geologic |
| | "thunderball" iron concretions known as | | Studies of the |
| | Moqui Marbles. These oddities weather out of | | Kaiparowits Coal-Basin, |
| | the Navajo sandstone and are a popular recreation feature. | North Escalante | Utah. P. 16, and UT BLM Statewide Final |
| | recreation feature. | Canyons WSA | Coalition. Wilderness at |
| | | | the Edge. P. 189, and |
| | The Waterpocket Fold tops out at Deer Point | | Davidson, E.S., Geology |
| | (7,243 feet). Most of the Waterpocket Fold is | | of the Circle Cliffs Area, |
| | in the Capitol Reef National Park where it is a | Escalante-Cold Mesa | Garfield and Kane |
| | major landmark. | unit | Counties, Utah, 1967. p. |
| | The inner gorges of the Upper Moody | | T.T. 1 TYY! 1 |
| | Canyons cut into the relatively harder Kaibab | Eggalanta C-1134 | Utah Wilderness Coalition Wilderness at |
| | Limestone and Coconino Sandstone (oldest exposed layer in this region). | Escalante-Cold Mesa unit | Coalition. Wilderness at the Edge. P. 189 |
| | Dry Valley Creek Canyon: A waterfall blocks | umi | the Euge. F. 189 |
| | the entrance to Dry Valley Creek Canyon and | | |
| | consequently, the canyon remains in its | | |
| | natural condition. A perennial stream cuts | | |
| | through alluvial benches. It is a relict and | | |
| | probably possesses important scientific | | UT BLM Statewide Final |
| | values. The East Kaibab Monocline or the Cockscomb | WSA | Wilderness EIS, 1990 |
| | is unique as a Colorado Plateau structure. Its | | |
| | alignment with the Paunsaugant, Sevier, and | | |
| | Hurricane faults suggest that it too could be a | | |
| | fault at depth. It extends from the Colorado | | |
| | River north to Canaan Peak and is a major | - | UT BLM Statewide Final |
| | landmark. The Blues - a Cretaceous shale badlands, richly | ine Cockscomb WSA | Wilderness EIS, 1990 |
| | colored and contrasting with adjacent pink | | |
| | sandstone cliffs that forms a significant part of | | |
| | the vista for visitors to Bryce Canyon National | | |
| | Park. The Kaiparowits formation is well | | |
| | exposed here represents an accumulation of exceedingly rapid proportions and an immature | | |
| | sedimentary region which is not well displayed | | |
| | in any other formation in the Colorado | The Blues WSA (near | UT BLM Statewide Final |
| | Plateau. | Bryce Canyon) | Wilderness EIS, 1990 |
| | Fiftymile Mountain is a complex of deep | | |
| | canyons, upwarps, monoclines, liogbacks and a | | |
| | spectacular 42-mile long Straight Cliffs wall, topping a thousand-foot-high cliff line of the | | |
| | Summerville, Morrison and Dakota formations. | Kaiparowits Plateau - | |
| | This complex marks the edge of the | Fiftymile Mountain | UT BLM Statewide Final |
| | Kaiparowits Plateau. | WSA | Wilderness EIS, 1990 |
| | Ancient coal fires of Right Hand Collet Canyon | | |
| | have left surface remains in the form of clinkers | | |
| | and deep red ash. These remains dominate the | | UT BLM Statewide Final |
| | visual character of the drainage. | Carcass Canyon WSA | Wilderness EIS, 1990 |
| | Arch Span of 40 feet located in Calf Canyon, | , | UT BLM Statewide Final |
| | and is visible from the Alvey Wash road. | Carcass Canyon WSA | Wilderness EIS, 1990 |
| | · | | |
| | Burning Hills - naturally occurring | | IITDIMO 11 P |
| | · | Burning Hills WSA | UT BLM Statewide Final Wilderness EIS, 1990 |

1 of 17 DOI-2019分便 P相段吧:

| GSEN | <u>IM 8-30-17</u> | |
|---|---------------------|--|
| Description | Location | Source |
| Devils Garden - oddly shaped arches (including | | |
| Metate Arch) and rock formations in the hills at | | |
| , , , , , , , , , , , , , , , , , , , | | IIT DI M Ctatarrilla Ein 1 |
| the foot of the cliffs marking the Kaiparowits | | UT BLM Statewide Final |
| Plateau. | Carcass Canyon WSA | Wilderness EIS, 1990 |
| This area possesses exceptional scenic values | | |
| and contains a portion of the Cockscomb, a | | l l |
| ± . | | |
| prominent southern Utah geologic feature. | | |
| The Cockscomb forms 2 parallel knife-edged | | |
| ridges with a bisection V-shaped trough. | | |
| | | l l |
| Flatirons, small monoliths, and other colorful | | |
| formations are present on the west ridge. | | Į l |
| These major features of south central Utah | | UT BLM Statewide Final |
| | Mud Coming Wich | |
| cover over 4,000 acres. | Mud Spring WSA | Wilderness EIS, 1990 |
| | | l l |
| An interesting fold in Henrieville Creek along | | Į l |
| the northwest boundary of the WSA is of | | UT BLM Statewide Final |
| | M-10 ' Wo' | |
| geologic interest and a sightseeing attraction | IVIud Spring WSA | Wilderness EIS, 1990 |
| Window Wind Arch above the middle trail | | Ι |
| has scenic value because of its location on the | | l l |
| | | |
| very edge of the Straight Cliffs. The Straight | | l l |
| Cliffs escarpment is major landmark in south- | | l l |
| central Utah and an important scenic feature | | l l |
| - | | l l |
| within view from the Hole-in-the-Rock road. | | l l |
| Woolsey Arch is located in Rock Creek | | l l |
| Basin, an area of colorful Navajo sandstone | Fifty Mile Mountain | UT BLM Statewide Final |
| | | |
| and high cliffs. | WSA | Wilderness EIS, 1990 |
| Unique because it consists of 2 prominent | | |
| southern Utah physiographic systems. It | | l l |
| 1 7 2 1 7 | | l l |
| includes the eastern most extension of the | | l l |
| White Cliffs component of the famous | | l l |
| ascending staircase, cliff and terrace | | l l |
| physiography, the Vermillion, White, and | | l l |
| | | Į l |
| Pink Cliffs; and east of the Paria river, the | | |
| dividing point is the landscape representative | | |
| of the Glen Canyon physiography of | | |
| | | |
| sculptured, dissected, and exposed Navajo | | |
| sandstone. The area where these merge | | |
| between Deer Range and Rock Springs Bench | | |
| | | LIT DI M C4-4 '1 B' 1 |
| is a highly scenic complex and colorful | Paria-Hackberry | UT BLM Statewide Final |
| landscape. | WSA | Wilderness EIS, 1990 |
| The Vermillion Cliffs with its associated | | - |
| | | |
| Wingate Sandstone cliffs, colorful Chinle | | |
| badlands, and canyons with there multiple | | |
| colors and the intensity of coloration contribute | | |
| to high scenic quality. Included in this | | |
| landscape are Hackberry Canyon, Paria River | | |
| ÷ · · · · · · · · · · · · · · · · · · · | | |
| Valley, Hogeye Canyon, the Pilot Ridge- | | III DING |
| Starlight Canyon-Kirbys Point area and Eight | Paria-Hackberry | UT BLM Statewide Final |
| Mile Pass. | WSA. | Wilderness EIS, 1990 |
| An area of high scenic value include the breaks | | , |
| 9 | | |
| of the Rush Beds and the west wall of | | |
| Cottonwood Canyon, upper tributaries to | | l l |
| Hackberry Canyon, Death Valley Draw, and the | , | |
| exceptional Navajo Sandstone domes and fin | | l l |
| ÷ * | Dario Unalchama | UT BLM Statewide Final |
| formations on either side of lower Hackberry | Paria-Hackberry | |
| Canyon. | WSA. | Wilderness EIS, 1990 |
| | | |
| Four ONA's designated to preserve "unique | | |
| scenic values and natural wonders". North | | l l |
| | | |
| Escalante Canyon (5,800 acres), The Gulch | | <u> </u> |
| (3,430), Escalante Canyons (480 acres), Phipps- | North Escalante | UT BLM Statewide Final |
| Death Hollow (12 more outside WSA) | Canyons WSA. | Wilderness EIS, 1990 |
| ` ' | 2011/0110 11 011. | |
| This area is geologically complex and has | | l l |
| some of the most outstanding canyon scenery | | l l |
| in the country. Harris Wash a canyon of the | | |
| classic Escalante River drainage canyon form | | |
| · · · | | III DING |
| with many entrenched meanders in the Navajo | North Escalante | UT BLM Statewide Final |
| Sandstone. | Canyons WSA. | Wilderness EIS, 1990 |
| | , | ,, |
| | 1 | i |
| A unique feature of the Burning Hills is the | | Į. |
| | | |
| A unique feature of the Burning Hills is the red coloration in the landscape is the result of | | |
| A unique feature of the Burning Hills is the red coloration in the landscape is the result of geological changes attributed to the naturally | | IIT RI M Statawida Einel |
| A unique feature of the Burning Hills is the red coloration in the landscape is the result of | Burning Hills WSA | UT BLM Statewide Final Wilderness EIS, 1990 |
| A unique feature of the Burning Hills is the red coloration in the landscape is the result of geological changes attributed to the naturally occurring coal fires. The coloration creates a | | |

2 of 17 DOI-2019AME PAIN Paid:

| GSEN | <u> </u> | |
|--|----------------------|-------------------------|
| Description | Location | Source |
| · | | |
| The White Cliffs are high white or yellow cliffs | | |
| of Navajo Sandstone. Vary in height from 600' | | |
| at Deer Springs Point bench to 1,200' at Deer | | |
| | | |
| Springs Point and the Sheep Creek-Bull Valley | | |
| Gorge-Paria River confluence. The cliffs | | |
| consistently reach a 1000' in height and the cliff | Paria-Hackberry | UT BLM Statewide Final |
| line is interrupted by 8 canyons. | 1 | |
| | WSA. | Wilderness EIS, 1990 |
| | | |
| This area contains twenty-four undeveloped | | |
| springs. Ten are located in upper Paria, 6 in | | |
| | | |
| Hackberry, 5 on the eastern border of | | |
| Cottonwood Creek, and 3 on west boundary. | | |
| There are also 6 developed springs. These are | Paria-Hackberry | UT BLM Statewide Final |
| significant features in this arid environment. | WSA. | Wilderness EIS, 1990 |
| | W 57 L | Whitehess Els, 1990 |
| Phipps-Death Hollow ONA {12/23/70) | | |
| contains 34,288 acres managed to preserve | Phipps-Death Hollow | UT BLM Statewide Final |
| scenic values and natural wonders. | WSA. | Wilderness EIS, 1990 |
| Arches. Peek-a-boo Rock, Wahweap | | Sargent, K.A., |
| · · · · · | | |
| Window, Jacob Hamblin Arch, Starlight | | Environmental Geologic |
| Arch, Cobra Arch, Sam Pollack Arch, | | Studies of the |
| Woolsey Arch, and several more unnamed | Kaiparowits Plateau | Kaiparowits Coal-Basin, |
| arches and natural bridges. | and adjacent areas | Utah. |
| | and adjucent areas | |
| Sand-calcite crystals from the Morrison | | Sargent, K.A., |
| Formation. These crystals are the first | | Environmental Geologic |
| reported occurrence from rocks of Jurassic | | Studies of the |
| age and only reported sand crystals in | | Kaiparowits Coal-Basin, |
| southern Utah. | Kainaravvita Dlatass | Utah. |
| SOURICH CIAII. | Kaiparowits Plateau | Otali. |
| | | |
| Circle Cliffs in the northeast portion of WSA | | |
| features intensively colored red, orange, and | | |
| purple Chinle mounds and ledges at the base | | 1 |
| | | |
| of Wingate Sandstone cliffs. Vertically | | 1 |
| jointed cliffs banded with red, yellow, and | | |
| white colors and bench tops and upper cliff | | 1 |
| faces possess innumerable orange-red | | 1 |
| _ | | |
| Kayenta Sandstone knobs. One of most | | |
| spectacular and distinctive landscapes on the | | UT BLM Statewide Final |
| Colorado Plateau. | Steep Creek WSA. | Wilderness EIS, 1990 |
| Area includes Escalante Natural Bridge (130' | r | |
| • , | DI DATE | LITEDING: 11 T |
| high, 100 'span) and 4 other natural bridges | Phipps-Death Hollow | UT BLM Statewide Final |
| and arches. | WSA. | Wilderness EIS, 1990 |
| The Gulch is a major geologic feature. Deeply | | |
| entrenched very sheer red straight line | | |
| | | |
| Wingate Sandstone walls. High ridges and | | |
| slickrock peaks. Ridges drop fairly abruptly | | UT BLM Statewide Final |
| to canyons below. | Steep Creek WSA. | Wilderness EIS, 1990 |
| Lamanite Natural Bridge. Actually a large | 1 | , |
| | | |
| arch with good symmetry and form. Located | | |
| in an impressive setting in a deep side canyon | | UT BLM Statewide Final |
| to The Gulch. | Steep Creek WSA. | Wilderness EIS, 1990 |
| Petrified wood. Upper Gulch-Circle Cliffs | 1 | , |
| = = | | 1 |
| contains large, unbroken logs of petrified | | |
| wood (NEA 2,213 acres). Maximum log | | |
| length 36'. The scenic values of these logs is | | UT BLM Statewide Final |
| enhanced by their colorful surroundings. | Steep Creek WSA. | Wilderness EIS, 1990 |
| | BICCH CIECK WSA. | W Huerness E15, 1990 |
| Outstanding scenic values include the upper | | |
| portion of Paradise Canyon where sandstone | | |
| in the Wahweap Formation outcrops as | | |
| - | | |
| colorful walls and cliffs. Ponderosa pine | | |
| growing in the sandstone enhance the scenic | | |
| values. Two sandstone monoliths or fins | | |
| above Alvey Wash are prominent geological | | UT BLM Statewide Final |
| | Death Didge WC A | |
| features. | Death Ridge WSA. | Wilderness EIS, 1990 |
| | | |

3 of 17 DOI-2019Ane Pi的 Red:

| | <u> M 8-30-17 </u> | |
|---|---|---|
| Description | Location | Source |
| | | |
| The area contains a unique canyon and bench | | |
| system. The entire ISA contains outstanding | | |
| , · | | |
| scenery. Examples include the area east of | | |
| Horse Canyon. Four canyons have isolated 10 | | |
| benches of varying size. Many bench tops | | |
| have intricate pattern of innumerable orange- | | |
| red Kayenta Sandstone knobs. Wolverine | | |
| Canyon and Death Hollow have extremely | | |
| narrow and convoluted sections. Another | | |
| feature, Harris Wash a canyon of the classic | | |
| Escalante River drainage canyon form with | North Escalante | |
| many entrenched meanders in the Navajo | | UT BLM Statewide Final |
| | Canyons/The Gulch | |
| Sandstone. | ISA. | Wilderness EIS, 1990 |
| | | |
| Mollie's Nipple, an erosional remnant is a | | UT BLM Statewide Final |
| major landmark in the area. | Kaiparowitz Plateau. | Wilderness EIS, 1990 |
| Natural Arches. Sam Pollock Arch, located at | | |
| the head of a tributary drainage of Hackberry | | |
| Canyon, and Starlight Arch located west of | Paria-Hackberry | UT BLM Statewide Final |
| No Man's Mesa. | WSA. | Wilderness EIS, 1990 |
| 130 181411 5 181054. | WDA. | ** Huchics Els, 1990 |
| Area of diverse geology represented by | | |
| spectacular deep canyons. The Escalante River | | |
| Canyon is 1100 feet deep. The canyon walls are | | |
| rough and broken and the canyon is narrow and | | |
| it meanders. Pure white to golden sandstone has | | |
| been eroded into expanses of slickrock. Death | | |
| Hollow Canyon is 1,000' feet deep and | | |
| 1 | | |
| meandering. The extensive upper basin through | | |
| which Mamie Creek flows is a extremely | | |
| dissected area of canyons, tanks, other | | |
| formations. Red layers of Carmel Formation | | |
| cap high mesas and ledges of the exposed | Phipps-Death | UT BLM Statewide Final |
| Kayenta Formation. | Hollow WSA. | Wilderness EIS, 1990 |
| D-4-15-1 | HOHOW WSA. | ** Huchics E13, 1770 |
| Petrified wood deposits just west of the Old | D ' 11 11 | III DI Maria di Santa di |
| Paria Townsite and in Hackberry Canyon. Both | Paria-Hackberry | UT BLM Statewide Final |
| are in the Chinle formation. | WSA. | Wilderness EIS, 1990 |
| | | |
| All the topographic features of the Kaiparowits | | |
| region have been developed in sedimentary | | |
| rocks. The Kaiparowits Plateau is a slightly | Ī | |
| | | |
| tilted sedimentary mass that extends as a | | |
| tilted sedimentary mass that extends as a narrow mesa from the High Plateaus to Glen | | |
| narrow mesa from the High Plateaus to Glen | | |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, | | |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff | | |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of | | |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a | | |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and | | |
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| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. | Kaiparowitz Plateau. | UT BLM Statewide Final Wilderness EIS, 1990 |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. | - | |
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| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic | Paria-Hackberry | Wilderness EIS, 1990 UT BLM Statewide Final |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be | | Wilderness EIS, 1990 |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic | Paria-Hackberry | Wilderness EIS, 1990 UT BLM Statewide Final |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System. Escalante River from Lake Powell to its | Paria-Hackberry | Wilderness EIS, 1990 UT BLM Statewide Final |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System. Escalante River from Lake Powell to its source, a section of 14.9 miles, was | Paria-Hackberry | Wilderness EIS, 1990 UT BLM Statewide Final |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System. Escalante River from Lake Powell to its source, a section of 14.9 miles, was designated as for study as a candidate Wild | Paria-Hackberry WSA. | Wilderness EIS, 1990 UT BLM Statewide Final Wilderness EIS, 1990 |
| narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the Waterpocket monocline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken "comb" in the vicinity of Paria is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah. Paria River from Colorado River to its source, identified by NPS as possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System. Escalante River from Lake Powell to its source, a section of 14.9 miles, was | Paria-Hackberry | Wilderness EIS, 1990 UT BLM Statewide Final |

4 of 17 DOI-2019分便 阿斯段尼d:

| Object | Description | Location | Source |
|------------|---|-----------------------------|---|
| | Lower Calf Creek Falls. Calf Creek Canyon is | | |
| | characterized by red alcoved walls, 2 | | |
| (b)(5) DPP | waterfalls, and extensive expanses of white | | |
| | slickrock. Lower Calf Creek Falls drops 126' | | |
| | and Upper Calf Creek's drop is 86'. High | | |
| | educational values associated with | Phipps-Death | UT BLM Statewide Final |
| | interpretation of these areas. | Hollow WSA. | Wilderness EIS, 1990 |
| | The area contains 40 miles of perennial | Dhinna Daoth | UT BLM Statewide Final |
| | streams, a significant feature in this arid environment. | Phipps-Death Hollow WSA. | Wilderness EIS, 1990 |
| | environment. | Hollow W.S.A. | Wilderness Elb, 1990 |
| | Fossil assemblage photographs. Typical | | Sargent, K.A., |
| | mollusks from Tropic Shale, south of Escalante | | Environmental Geologic |
| | include straight cone cephalopods, ammonites, | | Studies of the |
| | gastropods, and pelecypods and Cretaceous | | Kaiparowits Coal-Basin, |
| | sharks teeth from the Straight Cliffs Formation. | Kaiparowits Plateau | Utah. pp 14-15. |
| | Gray Cliffs/Pink Cliffs - This sequence of | | |
| | rocks may contain one of the best and most continuous records of Late Cretaceous | | DIM Eggalanta/Vanah |
| | terrestrial life in the world. Formation has | | BLM, Escalante/Kanab RMP - Grand Staircase |
| | yielded early mammals, lizards, dinosaurs, | Kaiparowits Plateau - | Ecosystem Analysis, |
| | crocodillians, turtles, mollusks. | The Blues WSA | 1994 |
| | Fossils deemed by the Museum of Northern | | · - |
| | Arizona in a 1976 study to be of major | | |
| | importance. They are found in the Cretaceous | | |
| | Wahweap Formation outcrops and include | | |
| | abundant fragments of turtle shells and | | BLM, Kaiparowits |
| | dinosaurs, as well as several crocodile teeth. | | Power Project |
| | There is an excellent chance that mammal | 1 | Environmental Impact |
| | fossils will be found. | Nipple Bench Unit | Statement, 1976. |
| | The Straight Cliffs Formation is limited to the southern Utah area. It contains primitive | | BLM, Warm Springs |
| | mammals including one of the potentially | | Project Preliminary Draft |
| | oldest marsupial fossils identified. | Kaiparowits Plateau | EIS, 1996. |
| | Invertebrate and vertebrate specimens found | 1 | |
| | Straight Cliffs, Tropic Shale, and Dakota | | |
| | Formations. 13 collection sites recorded | | |
| | (gastropods, cephalopods in upper Cretaceous | | II. 1 DIM C |
| | Formations, vertebrate in Dakota and Tropic Shales). Likely to occur along entire length of | Caraaga Canyon | Utah BLM Statewide Final Wilderness EIS, |
| | the Straight Cliffs | WSA | 1990. |
| | The Kaiparowits is of interest in | | |
| | understanding the evolution of mammals and | | |
| | other terrestrial vertebrates. Very little is | | |
| | known of Cretaceous mammals prior to the | | |
| | latest part of that period. The mid-Cretaceous | | |
| | mammalian twilight zone is spanned by the fossiliferous, terrestrial rock units of the | | |
| | Kaiparowits region. They contain unique | | |
| | evidence bearing on the early diversification | | |
| | of important mammalian groups of the Late | | |
| | Cretaceous. The thickness, continuity, and | | Eaton, Jeffrey G, and |
| | broad temporal distribution of the | | Cifelli, Richard L. |
| | Kaiparowits sequence provides the | | Preliminary report on Late |
| | opportunity to document changes in terrestrial vertebrate assemblages over a wide span of | | Cretaceous mammals of |
| | Late Cretaceous time. | Kaiparowits Plateau | the Kaiparowits Plateau, southern Utah, 1988 |
| | Extremely significant fossils including marine | • | |
| | and brackish water mollusks, turtles, | | |
| | crocodillians, lizards, dinosaurs, fishes, and | | |
| | mammals have been recovered from the | | |
| | Dakota formation, Tropic Shale, Straight | | |
| | Cliffs Formation (Tibbet Canyon, Smoky | | |
| | Hollow, and John Henry members), and Wahweap formation in the area around the | | |
| | proposed Andalex mine and some localities | | |
| | lie directly along the proposed haul routes. | | |
| | This sequence of rocks (including the | | |
| | overlying Wahweap and Kaiparowits | | Eaton, Jeffrey G., |
| | formations) contain perhaps the best and most | | Personal correspondence |
| | continuous record of Late Cretaceous | Valueties 's Pl | to Mr. Mike Noel, BLM, |
| | terrestrial life in the world. | Kaiparowits Plateau | 1991 |
| | | | |

5 of 17 DOI-2019分便 阿斯段曼d:

| | IVI 8-3U-17 | C |
|---|---|--|
| Description | Location | Source |
| Sixty sites have been recorded and the | | |
| potential for additional sites is exceptionally | | |
| 1 7 | | |
| high. Sites discovered to date include lithic | | |
| scatters, 13 rockshelters (some w/storage | | |
| cysts and rock art), 1 pithouse village site and | | |
| 1 structure (probably of Anasazi origin). | | |
| _ · · · · · · · · · · · · · · · · · · · | N - 41. E - 1- 4- | III. DI M Ct. t |
| Some of the rock art and rock shelter and 1 | North Escalante | Utah BLM Statewide |
| campsite are potentially eligible for | Canyons/The Gulch | Final Wilderness EIS, |
| nomination to the NRHP. | ISA | 1990. |
| Friendship Cove Pictograph site nominated to | | |
| | Dhimas Dooth | Litab DI M Statavvida |
| NRHP. This site consists of a set of large | Phipps-Death | Utah BLM Statewide |
| Fremont style pictographs painted on the face | Hollow ISA, eastern | Final Wilderness EIS, |
| of a large sandstone cliff. | part | 1990. |
| Forty-four sites of diverse types have been | | |
| _ · · | | |
| recorded in the area. 14 rock art (petroglyph | | |
| and pictographs sites (2 from Fremont | | |
| culture)), 1 Pit-house village site, lithic | | |
| scatters of Paiute and Anasazi, and 6 | | Utah BLM Statewide |
| | Dhinna Daatt | |
| rockshelters have been discovered. Potential | Phipps-Death | Final Wilderness EIS, |
| for more sites is good. | Hollow ISA | 1990. |
| | | Utah Wilderness |
| Situated at the intersection of these major | | |
| Situated at the intersection of three major | | Coalition. Wilderness at |
| prehistoric cultures the Plateau has long been | | the Edge. p. 147 and |
| a magnet for archeological study. It has been | | Lister, Florence C., |
| recognized that the Kaiparowits Plateau might | | Kaiparowits Plateau and |
| | | _ |
| contain important clues that would aid in | | Glen Canyon prehistory, |
| answering questions in the archeology of the | | an interpretation based |
| Southwest. | Kaiparowits Plateau | on ceramics, 1964. |
| | 1 | , - |
| 70. 71. 14. 14. 14. 14. 14. 14. 14. 14. 14. 1 | | l l |
| Fiftymile Mountain Archeological District | | |
| contains more than 400 sites including | | l l |
| Anasazi habitations and granaries. Important | | |
| | | l l |
| scientific value. Some of the most significant | | l l |
| cultural resources in the Four Corners area. | | l l |
| Archaeological District (47,325 acre) has | | |
| been nominated to NRHP. Majority of sites | | |
| | | l l |
| are masonry structures (of 1-10 rooms). Most | | |
| are of Virgin Anasazi origin but include sites | | l l |
| attributed to Fremont, Hopi, and Paiute. | | Utah BLM Statewide |
| Navajo are also expected of occupying the | Fiftymile Mountain | Final Wilderness EIS, |
| | _ | |
| area. 4,000 total sites may be located in WSA. | WSA | 1990. |
| Sixty-five sites have been recorded. They | | l l |
| include lithic and ceramic scatters, masonry | | |
| structures (granaries and storage cysts), | | l l |
| | | l l |
| one rock shelter. Masonry and some | | l l |
| lithic/ceramic associated with Virgin | | l l |
| Anasazi/Virgin-Kayenta Anasazi. Two are | | l l |
| Pueblo 11-111 time period. Some sites are | | l l |
| <u>-</u> | | III-1 DIMO: |
| associated with Paiute-age or Archaic-age | | Utah BLM Statewide |
| peoples. At least 8 sites in this area are | | Final Wilderness EIS, |
| eligible for nomination to the NRHP. | WahweapWSA | 1990. |
| High concentration of prehistoric sites. | 1 | |
| _ = | | |
| Although surveys are incomplete for the | | |
| Warm Creek unit more that 600 sites have | Kaiparowits | BLM, Kaiparowits power |
| | <u> </u> | project environmental |
| been found ranging from lithic scatters and | Plateau/Warm Creek | 11 J |
| been found ranging from lithic scatters and | | impact statement 1076 |
| been found ranging from lithic scatters and campsites to rockshelters. | Plateau/Warm Creek unit | impact statement, 1976. |
| campsites to rockshelters. | | - |
| 1 | | impact statement, 1976. ERT, 1980, Kaiparowits |
| campsites to rockshelters. Part of a larger area extensively used by the | unit | ERT, 1980, Kaiparowits |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute | unit Kaiparowits | ERT, 1980, Kaiparowits coal development and |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be | unit Kaiparowits Plateau/Squaw | ERT, 1980, Kaiparowits coal development and transportation study, final |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute | unit Kaiparowits | ERT, 1980, Kaiparowits coal development and |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be | unit Kaiparowits Plateau/Squaw | ERT, 1980, Kaiparowits coal development and transportation study, final |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. | unit Kaiparowits Plateau/Squaw | ERT, 1980, Kaiparowits coal development and transportation study, final |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of | unit Kaiparowits Plateau/Squaw | ERT, 1980, Kaiparowits coal development and transportation study, final |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, | unit Kaiparowits Plateau/Squaw | ERT, 1980, Kaiparowits coal development and transportation study, final |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of | unit Kaiparowits Plateau/Squaw | ERT, 1980, Kaiparowits coal development and transportation study, final |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The | unit Kaiparowits Plateau/Squaw Canyon unit | ERT, 1980, Kaiparowits coal development and transportation study, final report. |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of | Kaiparowits Plateau/Squaw Canyon unit Kaiparowits | ERT, 1980, Kaiparowits coal development and transportation study, final report. Fish, Paul, Preliminary |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent | unit Kaiparowits Plateau/Squaw Canyon unit Kaiparowits Plateau/Nipple | ERT, 1980, Kaiparowits coal development and transportation study, final report. Fish, Paul, Preliminary Report Kaiparowits |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters. | Kaiparowits Plateau/Squaw Canyon unit Kaiparowits | ERT, 1980, Kaiparowits coal development and transportation study, final report. Fish, Paul, Preliminary Report Kaiparowits Power Project. |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent | unit Kaiparowits Plateau/Squaw Canyon unit Kaiparowits Plateau/Nipple | ERT, 1980, Kaiparowits coal development and transportation study, final report. Fish, Paul, Preliminary Report Kaiparowits |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters. Six sites have been recorded. One is Pueblo II | unit Kaiparowits Plateau/Squaw Canyon unit Kaiparowits Plateau/Nipple | ERT, 1980, Kaiparowits coal development and transportation study, final report. Fish, Paul, Preliminary Report Kaiparowits Power Project. Utah BLM Statewide |
| Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high. Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters. | unit Kaiparowits Plateau/Squaw Canyon unit Kaiparowits Plateau/Nipple | ERT, 1980, Kaiparowits coal development and transportation study, final report. Fish, Paul, Preliminary Report Kaiparowits Power Project. |

6 of 17 DOI-2019A0 PABUSd:

| | | Course |
|---|--|--|
| Description | Location | Source |
| One hundred-five sites (primarily lithic | | |
| scatters) have been recorded covering a broad | | |
| period of occupation. Ten rockshelters | | |
| 1 | | |
| w/storage cysts or storage caches, 1 | | |
| w/masonry room, 3 w/granaries associated | | |
| with Anasazi or Fremont have been | | |
| discovered. Additional sites include | | Utah BLM Statewide |
| petroglyph and pictograph panels associated | Carcass Canyon | Final Wilderness EIS, |
| with shelter sites and 1 burial site. | WSA | 1990. |
| | 17 5/1 | 1//0. |
| One hundred thirty-four documented sites | | DDATE 1 Co |
| represent virtually all known prehistoric | | BIM Utah Statewide |
| cultures in southern UT (Archaic, Fremont, | | Wilderness EIS, 1990, |
| Anasazi, Southern Paiute). 8,000 years of | | and Hauck, F.R.,Cultural |
| prehistory are represented. The sites primarily | | Resource Evaluation of |
| represent temporary habitation by hunter | | South-Central Utah, |
| | Death Didge WCA | 1977-1978. |
| gatherers. | Death Ridge WSA | 17//-17/0. |
| | | |
| The area contains 41 recorded sites and based | | |
| on surveys may contain exceptionally high | | |
| densities of sites Known sites include | | |
| | | |
| rockshelters, pit houses, lithic scatters, and | | |
| masonry structures. Pictograph panels are in | | |
| Deer Creek Canyon and petroglyphs are found | | |
| in Snake Creek Canyon. A study located and | | |
| estimated 612 sites per 23,000 acres, 564 | | |
| potentially eligible for nomination to the | | |
| 1 0 | | Litab DI M Ctat: 1 |
| NRHP (southern border of WSA). Another | | Utah BLM Statewide |
| inventory estimated 360 sites per 23,000 acres | | Final Wilderness EIS, |
| at the northern border of the WSA. | Paria-Hackberry WSA | 1990. |
| | | |
| The Kayenta Pueblo culture inhabiting the | | |
| Straight Cliff and portions of the Escalante | | |
| _ | | |
| River drainage between AD. 1000 and | | |
| 1200 were likely in contact with the Fremont | | |
| culture. Although both inhabited the area at | | |
| the same time and competed for limited | | |
| agricultural lands there is no evidence of open | | |
| | | |
| conflict during this time. Some modifications | | |
| of pottery making techniques between the | | |
| two cultures indicates that there was trade | | |
| and exchange between them. Little is known | | Lister, Kaiparowits |
| positively about the Kayenta culture, and | | Plateau and Glen Canyon |
| additional research in this area could provide | | Prehistory: An |
| _ | | 1 |
| valuable insight on interactions between the | G4: 1 4 G1:00 TXIG 4 | interpretation based on |
| two cultures. | Straight Cliffs WSA | ceramics. 1964. |
| Dance Hall Rock/Hole-in-the-Rock Trail. | | |
| While the Hole-in-the-Rock Trail was under | | |
| construction in 1879, Mormon Pioneers | | |
| camped at Fourtymile Spring and held | Two miles west of | |
| | | I I4-1- XV':1-1 |
| meetings and dances in the shelter of Dance | the Glen Canyon | Utah Wilderness |
| | | Coalition. Wilderness at |
| Hall Rock. Designated historical site by DOI | NRA on the Hole-in- | |
| | NRA on the Hole-in- the-Rock Trail | the Edge. P 182. |
| Hall Rock. Designated historical site by DOI | | the Edge. P 182. |
| Hall Rock. Designated historical site by DOI 1970. | the-Rock Trail Historic trail running | |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide | the-Rock Trail Historic trail running from Escalante to | Lambrechtse, Rudi. |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite | the-Rock Trail Historic trail running from Escalante to Hole in the Rock in | Lambrechtse, Rudi. Hiking the Escalante, |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah. | the-Rock Trail Historic trail running from Escalante to | Lambrechtse, Rudi. |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah. Boulder Mail Trail. Used to carry mail | the-Rock Trail Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA | Lambrechtse, Rudi. Hiking the Escalante, |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah. | the-Rock Trail Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA | Lambrechtse, Rudi. Hiking the Escalante, |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah. Boulder Mail Trail. Used to carry mail | the-Rock Trail Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA | Lambrechtse, Rudi. Hiking the Escalante, |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah. Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where | the-Rock Trail Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA | Lambrechtse, Rudi. Hiking the Escalante, 1985. |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah. Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. | the-Rock Trail Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA | Lambrechtse, Rudi. Hiking the Escalante, 1985. Utah BLM Statewide |
| Hall Rock. Designated historical site by DOI 1970. Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah. Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. Nominated to NRHP. Popular backpacking | the-Rock Trail Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA Phipps-Death | Lambrechtse, Rudi. Hiking the Escalante, 1985. Utah BLM Statewide Final Wilderness EIS, |
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| | Description | Location | Source |
| | Escalante-Boulder telephone line: First Boulder-Escalante telephone line constructed by Forest Service in 1911 providing first phone service to area. Still visible between Antone Flat and Sand Creek. | Phipps-Death Hollow ISA | Utah BLM Statewide Final Wilderness EIS, 1990. |
| 1 | Washington Phipps grave. A historical grave site of an early pioneer shot in 1878 in a dispute with his partner John Boynton. Provided the namesake for the area. | Phipps-Death Hollow ISA | Lambrechtse, Rudi. Hiking the Escalante, 1985. |
| 1 | Old Boulder Road. Main route between Escalante and Boulder until the CCC built Hell's Backbone Road and Highway 12 in 1 930's to replace it. | Phipps-Death Hollow ISA | Utah BLM Statewide Final Wilderness EIS, 1990. |
| 1 | The Hattie Green mine, an early copper working located on the crest of The Cockscomb. Old Paria Townsite was established in 1874 | The Cockscomb WSA | Utah BLM Statewide Final Wilderness EIS, 1990. |
| 1 | on the bench above the eastern bank of the Paria River by Mormon settlers who attempted to farm the bottomlands. Site was abandoned in 1890. Old Paria Townsite movie set. Built in the 1960's to film several movies. Now | adjacent to Paria- Hackberry WSA | Abby, Edward and Hyde, Philip. Slickrock p.46. |
| 1 | abandoned but still a popular recreation destination. | adjacent to Paria- Hackberry WSA | Abby, Edward and Hyde, Philip. Slickrock p.46. |
| | Riparian zones are corridors for many of the region's species, including neotripocal migrant birds. The corridors (including the Escalante, and Paria Rivers and Johnson Creek and their tributaries) bisect the region north to south allowing for exchange of individuals among different animal populations. The importance of movement corridors to the long term viability of animal populations is of great scientific and management interest. This area would afford many opportunities to enhance this ecological issue. | Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab including the Escalante, Paria rivers and Johnson Creek | Edwards, Tom, 1996; Knopf, 1985; Armbruster and Lande, 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al., 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978, Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974. |

8 of 17 DOI-2019Date PAREd:

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| | | | Newmark, 1995; Noss, |
| | 25 miles of riparian corridor in unit | Connects | 1993; Patterson, 1984; Pickett and Thompson, |
| | mountains to desert lowlands. Has | | 1978; Primack, 1993; |
| | concentration of hanging gardens a | <u> </u> | Saunders et al., 1991; |
| | vegetation, including relictual popu | * | Shaffer, 1981; Soule, |
| | canyon bottoms. Also supports man | | 1987; Soule and Wilcox, |
| | crevice communities. Connects oth | - | 1980; Wegner and |
| | protected areas. High plant endemi | | Merriam, 1979; Wilcove |
| | large extent of parent material expo | | et al., 1986; Willis, 1974. |
| | | | Spaulding, 1979; BLM |
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| | | | Meffe and Carroll, 1994; |
| | | | Newmark, 1995; Noss, 1993; Patterson, 1984; |
| | | | Pickett and Thompson, |
| | | | 1978; Primack, 1993; |
| | Riparian corridor links high countr | v to | Saunders et al., 1991; |
| | lowland desert scrub. Connects pro | · I | Shaffer, 1981; Soule, |
| | areas. Has high concentrations of is | | 1987; Soule and Wilcox, |
| | communities: hanging garden, rock | | 1980; Wegner and |
| | and canyon bottom communities. A | | Merriam, 1979; Wilcove |
| | abundance of packrat middens. | Paria River | et al., 1986; Willis, 1974. |
| | Fifty miles of perennial streams inc | cluding the | , , |
| | Paria River (which is a wild and sc | _ | Utah BLM Statewide |
| | inventory segment). Riparian veget | | Final Wilderness EIS, |
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| from the Mojave, Arizona deserts and northern Utah are all found here, with a few species from the Great Plains. The Colorado Plateau is surrounded by high mountains, isolating the flora and fatume Unlike many ecosystems, the plant density, diversity and stature within the monument is determined more by substrate than climate. Consequently, isolation, plus the great diversity of substrates (providing a wider range of soil chemisty and physical characteristics) found within close proximity to each other has resulted in a high level of plant endemism in this area. Eleven species lound in the monument are found nowhere else in the world. Of plants that occur only in Utah or an the Colorado Plateau, 125 pecies occur in the monument. The Caryonlands portion of the Colorado Plateau, 125 pecies occur in the monument. The Caryonlands portion of the Colorado Plateau, much of which is contained in the monument, is considered the richest floristic region in the Intermountain West, and contains 50% of Utah's rare and endemic species are found on substrates typical of most of the monument. Of the Canyonlands area, the monument area is considered on of the most The Colorado Plateau was upfifted and downeut without deformation. As a consequence, large areas of unmixed geologic parent materials are exposed, and plants must adapt to large array of highly distinct parent materials are the possed, and plants must adapt to large array of highly distinct parent materials are the possed, and plants must adapt to large array of highly distinct parent materials are the contains shales, an important ecological question. It also results in different plant community structure and dynamics than is generally observed in other ecosystems. This area contains shales, siltstones, mudstones, sandstones and immestone of differing depths, and deposited in a variety of environments (marine, freshwater and cologinal peths, and deposited in a variety of environments (marine, freshwater and cologinal peths, and deposited in a variety of environments | | | M 8-30-17 | |
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| Axelrod, 1960 1978; Stevens Dott, 1996; Ar and Lande, 19 and Merriam, | al. 1988· |
| 1978; Stevens Dott, 1996; An and Lande, 19 and Merriam, | |
| Dott, 1996; An and Lande, 19 and Merriam, | - |
| and Lande, 19 and Merriam, | • |
| and Merriam, | |
| | |
| 12010# 1001: D | * |
| Beier, 1993; B 1987; Brown, | • |
| Davidson et a | - |
| | - |
| Diamond, 198 | • |
| and Soule, 198 | • |
| and Gallagher, | • |
| Heaney, 1984; | |
| Contains a concentration of many different 1978; Kushlan | |
| geologic substrates/soils with different Lomolino and | Channell. |
| physical and chemical attributes . This area 1995; Meffe a | , |
| has a high concentration of endemics. This Carroll, 1994; | and |
| boundary also abuts protected areas (Glen 1995; Noss, 19 | nnd Newmark, |
| Canyon, Capitol Reef), thereby effectively Patterson, 198 | nnd Newmark, 993; |
| increasing the value of all three areas for and Thompson | nnd Newmark, 993; 4; Pickett |
| biological conservation. In addition, the Primack, 1993 | Newmark, 993; 4; Pickett n, 1978; |
| Waterpocket Fold has isolated two outcrops et al., 1991; Sl | Newmark, 993; 4; Pickett n, 1978; ; Saunders |
| of the same parent material. These two areas 1981; Soule, 1 | Newmark, 993; 4; Pickett n, 1978; ; Saunders naffer, |
| now support different floras. This presents an and Wilcox, 1 | Newmark, 993; 4; Pickett n, 1978; ; Saunders naffer, |
| | Newmark, 993; 4; Pickett n, 1978; ; Saunders naffer, 987; Soule |
| outstanding scientific opportunity to explore Wegner and M | nnd Newmark, 993; 4; Pickett n, 1978; ; Saunders naffer, 987; Soule 980; Ierriam, |
| - | nnd Newmark 993; 4; Pickett n, 1978; ; Saunder naffer, 987; Soul 980; Ierriam, |

| | <u>M 8-30-17</u> | | |
|--|----------------------|---|---|
| Description | Location | Source | |
| · | | | l |
| T1: 1 1: C 41 | | | |
| This is an exposed monocline. Consequently, | | | |
| many substrates (Summerville, Morrison, | | | |
| Dakota, Tropic, Entrada, Navajo, Wingate | | | |
| and Carmel) are exposed directly next to | | | |
| each other, providing an opportunity for | | | |
| | | | |
| studies of ecological processes independent | | | |
| of climate. This monocline also has an | | | |
| elevational gradient, facilitating the study of | | | |
| effects of temperature and moisture on | | | |
| community dynamics. In addition, the rocky | | | |
| substrate has provided refugia for many Arcto- | | | |
| | | | |
| Tertiary plants, providing a unique | | | |
| opportunity to examine the effects of ancient | | | |
| floral presence in the structuring of present- | | Hintze, 1988; Shulz, | |
| day plant communities. This area also | | 1993; Albee et al., 1988; | |
| supports a very high diversity of both general | | Axelrod, 1960; Welsh, | |
| and endemic flora. | Straight Cliffs area | 1978. | |
| | | 1710. | |
| Diversity of plant life ranging from low desert | | | |
| shrub to Ponderosa Pine (less that 1 mile | | | |
| apart) enhances the study and observation of | | Utah BLM Statewide | |
| ecology. 3 small stands of Ponderosa pine in | | Final Wilderness EIS, | |
| Alvey Wash. | Death Ridge WSA | 1990. | |
| Contained within the monument are 3-5 | | | |
| | | | |
| spatially separated areas where the same | | | |
| substrates are exposed in close proximity to | | | |
| each other. In addition, there are 5 elevational | | | |
| gradients along riparian corridors. This is | | | |
| critical for replicated scientific work to be | | Hintze, 1988; USGS. | |
| conducted. | Entire monument | Topographical Maps | |
| Riparian corridor with elevational gradient, | Zinii inonument | 1 0 1 | |
| 1 | | Hintze, 1988; USGS | |
| connecting desert low lands to the high | | Topographical Maps; | |
| country. Vermillion, White, Pink Cliffs | | Beier, 1993; Noss, 1992, | |
| (Triassic, Jurassic, Cretaceous material). | Johnson's Creek | 1993. | |
| Fifty Mile Mountain. Presence of aspen on | | Utah BLM Statewide | |
| Pleasant Grove, Steer Canyon, and Pinto | Fifty Mile Mountain | Final Wilderness EIS, | |
| Mare Canyons. | WSA | 1990. | |
| mare Carryons. | WOA | 1//0. | |
| | n d | | |
| Protects lands at low elevation sites | Entire monument | | |
| frequently rich in species diversity. The range | proposal including | | |
| of elevation in these areas from approximately | the Escalante area, | | |
| 4500-8300 feet encompasses a wide variation | | Hintze, 1988; Utah BIM | |
| | and areas west to | Final Wilderness EIS, | |
| 1 | | 1990 | |
| of plant and animal species in the region. | Kanab | ロフグリ | |
| hanging gardens, tinajas, canyon bottom, | | 1330 | |
| manging gardens, imajas, canyon contom, | | | |
| dunal pockets, salt-pocket and rock crevice | | | |
| dunal pockets, salt-pocket and rock crevice | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) | | | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic | | | |
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| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants. Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow-growing species that can thrive in extremely infertile sites. These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen | | Nabhen and Wilson, 1996; Harper et al., 1994; | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants. Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow-growing species that can thrive in extremely infertile sites. These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen versus seeds. They offer an opportunity to | | Nabhen and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants. Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow-growing species that can thrive in extremely infertile sites. These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen versus seeds. They offer an opportunity to study ground water flow dynamics in the | | Nabhen and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May et al., 1995; Fowler et al., | |
| dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants. Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow-growing species that can thrive in extremely infertile sites. These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen versus seeds. They offer an opportunity to | Entire monument | Nabhen and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May | |

12 of 17 DOI-2019分配 PAIR POId:

| Description | NM 8-30-17 Location | Source |
|--|------------------------|--|
| These canyons provide a high concentration | | |
| of isolated, unique plant and invertebrate | | |
| communities: hanging garden, rock crevice, | | |
| and canyon bottom communities. Many | | Axelrod, 1960; BLM |
| relictual plant species can be found in these | | Wilderness EIS; Van |
| communities. Pack rat middens are abundant | | Devender and Spauling, |
| providing paleoclimate and paleo-vegetation | ′ | 1979; Fowler et al., |
| information. | | 1995; Nabhen and |
| | Escalante canyons | Wilson, 1996. |
| Dunal pockets contribute Great Plains specie | | ,, iisoii, 1990. |
| to the flora. These are unique, isolated plant | Cockscomb to | |
| communities. | Kaiparowits | Hintze, 1988. |
| communities. | Kaipaiowits | Case and Cody, 1988; |
| Unique isolated communities and leasted | | Diamond, 1981; Dott, |
| Unique, isolated communities are located | | |
| throughout the monument. These include | | 1996; Harris, 1984; |
| hanging gardens, tinajas, canyon bottom, | | Ludwig and Whitford, |
| dunal pocket, salt pocket and rock crevice | | 1981; Fowler et al., |
| communities. They provide great | | 1995; Nabhen and |
| opportunities for examining evolution, gene | | Wilson, 1996; Roberts, |
| flow, island biogeography and other | | 1987; Reice, 1994; |
| ecological principles. | Entire monument | Axelrod, 1960. |
| | | al., 1996; Miller, 1961; |
| | | Minckley and Deacon, |
| | | 1968; Armbruster and |
| | | Lande, 1993; Fahrig and |
| | | Merriam, 1985; Beier, |
| | | 1993; Belovsky, 1987; |
| | | Brown, 1971; Davidson |
| | | et al. 1996; Diamond, |
| | | 1981; Frankel and Soule, |
| | | 1981; Harris and |
| | | Gallagher, 1989; Heaney, |
| | | 1984; IUCN, 1978; |
| | | Kushlan, 1979; Lomolino |
| | | and Channell, 1995; |
| | | Meffe and Carroll, |
| | | 1994; Newmark, 1995; |
| | | Noss, 1993; Patterson, |
| | | 1984; Pickett and |
| | | Thompson, 1978; |
| Biological conservation theory and literature | | Primack, 1993; Saunders |
| suggests that large contiguous conservation | | et al., 1991; Shaffer, |
| areas increase both extent and probability of | | 1981; Soule, 1987; Soule |
| population survival, increases protection of | | and Wilcox, 1980; |
| migratory pathways, and is the most effective | <u>_</u> | Wegner and Merriam, |
| means of conserving aquatic and riparian | | 1979; Wilcove et al., |
| communities. | Entire monument | 1979, Wilcove et al., 1986; Willis, 1974. |
| communices. | Little monument | 1200, WIIIIS, 17/4. |

| | GSENM 8-30-17 | | | | | |
|---|--|-------------------|---------------------------|--|--|--|
| t | Description | Location | Source | | | |
| | | | 1993; Albee et al., 1988; | | | |
| | | | Axelrod, 1960; Welsh, | | | |
| | | | 1978; Stevens, 1992; | | | |
| | | | Dott, 1996; Armbruster | | | |
| | | | and Lande, 1993; Fahrig | | | |
| | | | and Merriam, 1985; | | | |
| | | | Beier, 1993; Belovsky, | | | |
| | | | 1987; Brown, 1971; | | | |
| | | | Davidson et al. 1996; | | | |
| | | | Diamond, 1981; Frankel | | | |
| | | | and Soule, 1981; Harris | | | |
| | | | and Gallagher, 1989; | | | |
| | | | Heaney, 1984; IUCN, | | | |
| | | | 1978; Kushlan, 1979; | | | |
| | | | Lomolino and Channell, | | | |
| | | | 1995; Meffe and | | | |
| | | | Carroll, 1994; Newmark, | | | |
| | | | 1995; Noss, 1993; | | | |
| | The connection with Glen Canyon provides a | Common boundaries | Patterson, 1984; Pickett | | | |
| | larger protected area. It also provides low | and riparian | and Thompson, 1978; | | | |
| | desert vegetation as part of the vegetational | connections with | Primack, 1993; Saunders | | | |
| | gradients. Large areas are important for | Glen Canyon NRA, | et al., 1991; Shaffer, | | | |
| | maintaining the evolutionary potential of | Capitol Reef NP, | 1981; Soule, 1987; Soule | | | |
| | plants and animals, allowing for the exchange | Box Hollow | and Wilcox, 1980; | | | |
| | of genetic material among the separate | | Wegner and Merriam, | | | |
| | populations that constitute a population. | Wilderness | 1979; Wilcove et al., | | | |
| | Cryptobiotic soil crusts are critical for soil | | | | | |
| | stability, nutrient availability for vascular | | | | | |
| | plants and normal soil surface temperatures. | | | | | |
| | These crusts are extremely fragile and easily | | | | | |
| | disrupted by soil surface disturbances such | | | | | |
| | as trampling or off-road vehicles. Since the | | | | | |
| | soils in the monument are highly susceptible | | Belnap, 1994, 1995; | | | |
| | to erosion, it is important that these biocrusts | | Belnap and Harper, | | | |
| | be protected so they stabilize these erodible | | 1995; Belnap et al., | | | |
| | soil surfaces. In addition, these ecosystems | | 1994; Jefferies, 1989; | | | |
| | have few nitrogen-fixing plants. Since these | | Harper and Marble, | | | |
| | crusts provide nitrogen to these soils, they are | | 1988; Johansen, 1993; | | | |
| | a critical part of these nitrogen-limited | | Mack and Thompson, | | | |
| | ecosystems. | Entire monument | 1978; Fleischner, 1994. | | | |
| | Disturbance of most soil surfaces in the | | | | | |
| | monument area will result in soil surface | | | | | |
| | temperature changes as bio-crusted surfaces | | | | | |
| | are darker than the substrates underneath | | | | | |
| | them. The expected lowering of temperature | | | | | |
| | with disturbance would result in cooler soil | | | | | |
| | temperatures, and thus later spring plant | | | | | |
| | germination and lower nutrient uptake rates. | | | | | |
| | This may adversely effect desert plant growth | | | | | |
| | in early spring. Surface temperatures also | | | | | |
| | influence foraging and burrowing patterns for | | | | | |
| | | | T 1: 1 XX/1: :46 1 | | | |
| | many soil invertebrates, and many effect | | Ludwig and Whitford | | | |

| | | ENM 8-30-17 | | | |
|-----|--|--|---------------------------|--|--|
| ect | Description | Location | Source | | |
| | stable documented to date, as both large and | | | | |
| | small scale disturbances are limited spatially | | | | |
| | and temporally. Very little of this area was | | | | |
| | glaciated in the Pleistocene. Most plant | | | | |
| | communities evolved without fire or grazing | | | | |
| | by large ungulate herds, as evidenced by | | | | |
| | characteristics of the soils and the flora. | | | | |
| | Catastrophic events are minimal, with the | | | | |
| | exception of wash bottoms. Microsite | | | | |
| | disturbances are minimal as well, as most | | | | |
| | soils support very low populations of | | Belnap, 1995, 1996; | | |
| | invertebrates. 1880 photos repeated in 1990 | | Belnap et al., 1994; | | |
| | show many sites virtually unchanged, with the | | Mack and Thompson, | | |
| | same tree, shrub and grass individuals | | 1982; Fleischner, 1994; | | |
| | present, indicating very low species' turnover | | Kleiner and Harper | | |
| | rates in this region relative to other | | 1972; Harper et al., | | |
| | ecosystems. In addition, dead tree branches | | 1994; Webb, 1994; | | |
| | can still be found in virtually the same | | Rogers, 1982; Pickett | | |
| | condition as they were 100 years ago, | | and White, 1985; | | |
| | indicating plant tissue decomposition rates are | | Moldenke, 1995; Evans | | |
| | extremely low in this region. This makes this | | and Bhleringer, 1993; | | |
| | area highly unique, as most ecosystems are | | Turner et al. 1993; | | |
| | believed to be structured disturbance. In this | | Iverson et al. 1981; | | |
| | region, ecological processes can be studied | | Webb and Wilshire | | |
| | independent of the effects of disturbance to | | 1981; Larsen 1996; | | |
| | give us greater insight into their functioning | Entire monument | Bowers et al. 1994. | | |
| | give as greater misigni into their functioning | Linne monunicili | DOWGIS Ct al. 1774. | | |
| | Indiction of this area to a real to the terms of | | Wilesy at al 1006 | | |
| | Isolation of this area has resulted in minimal | | Wilcox et al 1986; | | |
| | human impacts. Many of the ecosystems | | Wilcox and Murphy | | |
| | found in this area have received little, if any, | | 1985; Mader et al., 1990; | | |
| | human use and the type and extent of | | Osley, et al., 1974; Rost | | |
| | disturbance has that has occurred is known. | | and Bailey, 1979; | | |
| | In addition, there are large areas unbroken by | | Witmer and Calesta, | | |
| | roads. This is essential to the protection and | | 1985 | | |
| | conservation of plant and animal species. | Entire monument | | | |
| | | | | | |
| | The monument lacks any areas that have been | | | | |
| | invaded to any large extent by exotic species. | | | | |
| | There are few such areas in the Intermountain | | | | |
| | West, and they can provide invaluable | | Billings, 1994; | | |
| | information in understanding the ecology and | | Fleischner, 1994; | | |
| | dynamics of exotic plant invasion. These | | Forcella and Harvey, | | |
| | areas aid scientists in understanding what | | 1983; Gross, 1987; | | |
| | makes systems resistant to such invasions, | | Hunter, 1990; Loope et | | |
| | and thus help land managers predict what | | al., 1988; MacMahon, | | |
| | areas are susceptible to invasion and restore | | 1987; Pellant and Hall, | | |
| | already-invaded regions. | Entire monument | 1994 | | |
| | j | | Utah BLM Statewide | | |
| | Six threatened or endangered candidate | | Final Wilderness EIS, | | |
| | species are located within or near this area. | Wahweap WSA | 1990. | | |
| | Contains Peregrine falcon (endangered) and 6 | 1 | Utah BLM Statewide | | |
| | special status animal species and 5 special | | Final Wilderness EIS, | | |
| | status plant species. | Mud Spring WSA | 1990. | | |
| | Habitat for Swainson's hawk, golden eagle | maa oping won | Utah BLM Statewide | | |
| | (Sensitive) and peregrine falcon | | Final Wilderness EIS, | | |
| | (endangered). | The Blues WSA | 1990. | | |
| | (Citaligerea). | THE DIRES WOA | 1//0. | | |
| | | Daria Haalshamms and | Utah BLM Statewide | | |
| | Department follows and hold and a (d | | | | |
| | Peregrine falcon and bald eagle (endangered). | Cockscomb WSA | Final Wilderness EIS, | | |
| | 8 animal and 5 plant species of special status. | and Wahweap WSA | 1990. | | |
| | | | Utah BLM Statewide | | |
| | Thirteen species of raptors are known or | D • • • • • • • • • • • • • • • • • • • | Final Wilderness EIS, | | |
| | suspected of nesting in the WSA. | Burning Hills WSA | 1990. | | |
| | Relict plant community in the upper part of | | Utah BLM Statewide | | |
| | Dry Valley "probably possesses important | 1 2 3 | Final Wilderness EIS, | | |
| | scientific values" | WSA | 1990. | | |
| | TSCIETITIC VALUES | WSA | 1 77 U. | | |

| GSENM 8-30-17 | | | | | |
|---|---------------------|--------------------------|--|--|--|
| Description | Location | Source | | | |
| | | | | | |
| Unique relict plant community of pinion- | | | | | |
| juniper and sagebrush-grass park vegetation | | | | | |
| accessible only by a steep trail. One of the | | | | | |
| few remaining unaltered plant communities in | | | | | |
| Utah. No Man's Mesa RNA was designated as | | | | | |
| an ACEC in 1986. Such areas are invaluable | | | | | |
| | | | | | |
| to science. They provide restoration and | | | | | |
| management goals for administration of | | | | | |
| lands. Such areas are also critical to scientists | | | | | |
| who are trying to understand the natural | Paria-Hackberry | Utah BLM Statewide | | | |
| functioning of ecosystems. Grasslands are | WSA (No Man's | Final Wilderness EIS, | | | |
| especially valuable, as almost all have been | Mesa and Little No | 1990 and Kleiner and | | | |
| heavily grazed for over a century. | Man's Mesa) | Harper, 1972 | | | |
| Four Mile Bench Old Tree Area. Unique area | , | | | | |
| of extremely old (1,400 years) pinon and | | Utah BLM Statewide | | | |
| juniper trees. Unique scientific values on | | Final Wilderness EIS, | | | |
| | Wohyyaan WG A | | | | |
| over 1,000 acres. | Wahweap WSA | 1990. | | | |
| This region is at the northern end of areas that | | | | | |
| receive summer monsoonal rains, and is at the | | | | | |
| southern end of areas that depends on winter | | | | | |
| rains. This distinction is very important to the | | | | | |
| physiological functioning of plants in this | | | | | |
| moisture-limited areas, as even minor | | | | | |
| changes in temperature and/or rainfall may | | | | | |
| lead to major differences in water availability, | | | | | |
| · · · · · · · · · · · · · · · · · · · | | | | | |
| and consequently, plant metabolic processes. | | | | | |
| Climate change is expected to alter both | | | | | |
| rainfall timing and amount, as well as | | | | | |
| temperature. This, in tum, would alter plant | | | | | |
| physiology, water use patterns and community | • | Ayyad 1981; Graff 1988; | | | |
| composition in this region, making the | | Van Devender and | | | |
| monument an excellent place for studying | | Spaulding 1979; Wagner | | | |
| global climate change. | Entire monument | 1981. | | | |
| groom emmate emange. | Zittire intendiment | 1701. | | | |
| TT-111 | | | | | |
| Unlike most deserts that are primarily | | | | | |
| depositional environments, the CP is an | | | | | |
| erosional one (Welsh 1979; Nat Hist). This | | | | | |
| contributes to high endemism, as substrate | | | | | |
| material is not mixed. In addition, it makes | | | | | |
| this region highly susceptible to soil loss | | | | | |
| when surfaces are disturbed. This soil loss has | | | | | |
| a negative impact on plant and aquatic | | Welsh, 1979; Harper et | | | |
| communities, as well as dam sediment loads. | Entire monument | al., 1994. | | | |
| | Zitti Cinonument | w1., 177T. | | | |
| The effects of scaling up and down are not | | | | | |
| known for many ecological processes. The | | | | | |
| multitude of variably sized, discrete | | | | | |
| watersheds found in this area offer a unique | | | | | |
| opportunity to test the effects of scaling for | | | | | |
| hydrological and biological processes. In | | | | | |
| addition, the close spacing of these | | | | | |
| watersheds offers a chance to separate the | | Allen and Hoekstra 1987: | | | |
| effects of area per se from other | | Reice 1994; Pickett and | | | |
| | | · · | | | |
| environmental factors on community | F | White 1985; Rosenweig | | | |
| structure. | Entire monument | 1985. | | | |
| Semi-arid and arid lands of the western | | | | | |
| United States are highly susceptible to | | | | | |
| desertification. The lack of natural | | | | | |
| disturbance in much of this area offers the | | | | | |
| opportunity to study the effects of different | | | | | |
| types and levels of land use and to better | | | | | |
| | | | | | |
| understand the steps leading to | E. | D 1002 | | | |
| desertification. | Entire monument | Dregne, 1983. | | | |

| | GSENM 8-30-17 | | | | |
|-----|--|---------------------|--------------------------|--|--|
| ect | Description | Location | Source | | |
| | This area contains few exotic plants. Having | | | | |
| | this resource gives the opportunity to better | | | | |
| | understand what factors inhibit or facilitate | | | | |
| | exotic plant invasions. Roads have been | | | | |
| | heavily implicated in facilitating exotic plant | | | | |
| | invasion, while intact Cryptobiotic soil crusts | | | | |
| | and less favorable soil chemistry may inhibit | | | | |
| | such an invasion. Invasion could | | Monsen and Kitchen, | | |
| | fundamentally alter these communities, by | | 1994; Kelly 1996; Harper | | |
| | altering species composition, community | | and Marble 1988; | | |
| | dynamics and fire cycles. | Entire monument | Davidson et al. 1996. | | |
| | Quaternary resources are abundant in the | | | | |
| | monument. Pack rat middens enable | | | | |
| | reconstruction of paleoclimates and paleo- | | | | |
| | vegetation, while Pleistocene animal remains | | | | |
| | found in alcoves. | Entire monument | Harper et al., 1994. | | |
| | Unlike more mesic ecosystems, there is little | | 1 | | |
| | evidence that desert communities demonstrate | | | | |
| | traditional successional sequences. There is | | | | |
| | little or no modification of soils or other site | | | | |
| | characteristics by previous-occurring plants. | | | | |
| | Understanding of this is important for | | | | |
| | restoration efforts. The monument offers an | | Barbour, 1981; | | |
| | excellent opportunity to study this | | MacMahon, 1987; | | |
| | phenomenon independent of climate and | | Shreve, 1942; Dott, | | |
| | disturbance factors. | Entire monument | 1996. | | |
| | Peregrine falcon and Bald Eagle use these | Death Ridge and | Utah Statewide | | |
| | areas. Areas are habitat for 7 plant and 9 | _ | Wilderness Study Report, | | |
| | animal species considered sensitive. | WSAs | 1991. | | |
| | Peregrine falcon and Bald Eagle use these | Phipps Death Hollow | | | |
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| | <u> </u> | North Escalante | | | |
| | Peregrine falcon and Bald Eagle use these | Canyon, The Gulch | Utah Statewide | | |
| | areas. Areas are habitat for 9 plant and 7 | and Carcass Canyon | Wilderness Study Report, | | |
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THE SECRETARY OF THE SATERIOR

WASHINGTON

NOV 6 1996

Memorandum

To:

Director, Bureau of Land Management

From:

Secretary

Subject:

Management of the Grand Staircase - Escalante National Monument

On September 18, 1996, the President created by Proclamation the Grand Staircase - Escalante National Monument in Utah. This is the first National Monument in history for which management responsibility has been given to the Bureau of Land Management (BLM), offering BLM a highly visible opportunity to demonstrate its stewardship. The purposes of this memorandum are: (a) to direct that you issue interim guidance for managing the Monument during the next three years; and (b) to direct you to prepare the management plan for the Monument for my adoption by the end of that period.

The President's Proclamation directs management of the Monument pursuant to applicable legal authorities, including the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA). Further, I want to make certain that we work very closely with the State of Utah as our efforts proceed. While stewardship of the Grand Staircase - Escalante National Monument is the responsibility of this Department, I believe an effective working relationship with the State is crucial to our development of an effective management plan. The State possesses expertise in numerous management disciplines, and its capabilities will complement our own.

INTERIM MANAGEMENT DIRECTION

The public should have more explicit information concerning the management of specific activities during the three year interim period. Accordingly, I ask that you issue appropriate guidance to field managers as soon as possible. Field managers should be fully conversant with that guidance and initiate efforts to provide information to the public as necessary.

The President's Proclamation cited the Monument's unique geological, paleontological, archeological, biological and historical values. It also stated that valid existing rights (VER) must be recognized, withdrew Federal lands and interests in lands within the Monument from entry, location, selection, sale, leasing, or other disposition (except exchange) under the public land laws including, among others, the mineral leasing and mining laws, and stated that existing grazing uses shall continue to be governed by applicable laws and regulations other than the Proclamation. As a general principle,

actions that are not precluded by the Proclamation and which do not conflict with the established purposes of the Monument may continue.

DEVELOPING THE MONUMENT MANAGEMENT PLAN

The President's Proclamation directed me to prepare, within three years, a management plan for the Monument and any necessary regulations. You should take the lead in preparing the plan and proposing it for my adoption. In preparing the plan, you must make certain that it reflects the purposes for which the Monument was established.

In order to assure an effective planning effort, you should develop a detailed inventory of significant resources within the Monument's boundaries which have been identified thus far through available sources. The inventory should have a usable format and be easy to update as new information becomes available. Attached is a bibliography of monument resources that was completed in connection with the Proclamation. Although there is considerable understanding of the Monument's attributes, much more work is needed to identify, assess, interpret and protect them in an integrated manner.

In addition to the State, local and Tribal governments, the private sector, the public and other Federal agencies have interests and insights as to managing the Monument's resources and integrating the Monument with local community development. I expect you to be energetic and innovative in working with these entities. Many models for involving our neighbors have been developed and implemented. Useful lessons can be drawn from these models throughout the West by both government and non-government entities.

The management of the Grand Staircase - Escalante National Monument is one of the Department's most visible and important priorities. Your work will have a profound impact on the public's assessment of the Bureau and of Federal land management in general. I know that the challenges of managing the Monument and preparing its management plan are significant and encompass a very broad variety of scientific, historical, and economic considerations. The Bureau will have my full support and encouragement as your efforts proceed.

Attachment

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Page 14

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Grand Staircase - Escalante National Monument List of Historic and Scientific Objects of Interest

Objects of Geologic Interest

Description: Perennial streams enter entrenched canyons in white Navajo and deep-red Windgate Sandstone. Deer Creek, Steep Creek, and The Gulch have perennial flows of clear cold water. The Gulch leads up into the spectacular Circle Cliffs where remarkable specimens of petrified wood (60 ft. logs) exist in the Morrison and Chinle formations.

Location: Escalante - Steep Creek WSA

****************** Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: White Canyon cuts through the Kaibab Limestone to the Coconino Sandstone, the oldest stratum in the Upper Escalante drainage.

Location: Escalante - Studhorse Peaks unit

Source: Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967. p. 10

Description: Big Spencer Flat Road and the V Road is site of "thunderball" iron concretions known as Moqui marbles. These oddities weather out of the Navaho sandstone and are a popular recreation feature.

Location: North Escalante Canyons WSA

Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. p. 16, and Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Waterpocket Fold tops out at Deer Point (7,243 feet). Most of the Waterpocket Fold is in the Capitol Reef National Park where it is a major The second second landmark. landmark.

Location: Escalante - Colt Mesa unit

Source: Utah Wilderness Coalition. Wilderness at the Edge. p. 189, and Davidson. E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties. Utah, 1967. p. 61

Description: The inner gorges of the upper Moody Canyons cut into the relatively harder Kaibab Limestone and Coconino Sandstone (oldest exposed layer in this region).

Location: Escalante - Colt Mesa unit

Source: Utah Wilderness Coalition. Wilderness at the Edge. p. 189

Description: Dry Valley Creek Canyon. A waterfall blocks the entrance to Dry Valley Creek Canyon and consequently, the canyon remains in its natural condition. A perennial stream cuts through alluvial benches. It is relict and probably possesses important scientific values.

Services May Location: Mud Springs Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The East Kaibab Monocline or the Cockscomb is unique as a Colorado

DOI-2019-06 01978

Plateau structure. Its alignment with the Paunsaugant, Seevier, and Hurricane faults suggest that it too could be a fault at depth. It extends from the Colorado River north to Canaan Peak and is a major landmark.

Location: Kaiparowits Plateau - The Cockscomb WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Blues - a Cretaceous shale badlands, richly colored and contrasting with adjacent pink sandstone cliffs that forms a significant part of the vista for visitors to Bryce Canyon National Park. The Kaiparowits formation is well exposed here represents an accumulation of exceedingly rapid proportions and an immature sedimentary region which is not well displayed in any other formation in the Colorado Plateau.

Location: The Blues WSA (near Bryce Canyon)

Source: Welch, S.L., Rigby, J.K., Hamblin, W.K., A Survey of Natural Landmark Areas of the North Portion of the Colorado Plateau, 1980. p. 248

Description: Fiftymile Mountain is a complex of deep canyons, upwarps, monoclines, hogbacks and a spectacular 42-mile long Straight Cliffs wall, topping a thousand-foot-high cliffline of the Summerville, Morrison and Dakota formations. This complex marks the edge of the Kaiparowits Plateau.

Location: Kaiparowits Plateau - Fiftymile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Ancient coal fires of Right Hand Collet Canyon have left surface remains in the form of clinkers and deep red ash. These remains dominate the visual character of the drainage.

Location: Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Arch. Span of 40 feet located in Calf Canyon, and is visible from the Alvey Wash road.

Location: Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Burning Hills - naturally occurring underground coal fires have turned steep and rugged exposed hilltops a distinctive red.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Devils Garden - oddly shaped arches (including Metate Arch) and rock formations in the hills at the foot of the cliffs marking the Kaiparowits Plateau.

Location: Carcass Canyon WSA (east of WSA)

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: This area possesses exceptional scenic values and contains a

DOI-2019-06 01979

portion of the Cockscomb, a prominent southern Utah geologic feature. the Cockscomb forms 2 parallel knife-edged ridges with a bisection V-shaped trough. -- Flatirons, small monoliths, and other colorful formations are present on the west ridge. These major features of south central Utah cover over 4,000 acres.

Location: Mud Spring WSA.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An interesting fold in Henrieville Creek along the northwest boundary of the WSA is of geologic interest and a sightseeing attraction.

Location: Mud Spring WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Window Wind Arch above the middle trail has scenic value because of its location on the very edge of the Straight Cliffs. The Straight Cliffs escarpment is major landmark in south-central Utah and an important scenic feature within view from the Hole-in-the-Rock road. Woolsey Arch is located in Rock Creek Basin, an area of colorful Navaho sandstone and high cliffs.

Location: Fifty Mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique because it consists of 2 prominent southern Utah physiographic systems. It includes the eastern most extension of the White Cliffs component of the famous ascending staircase, cliff and terrace physiography, the Vermillion, White, and Pink Cliffs; and east of the Paria river, the dividing point is the landscape representative of the Glen Canyon physiography of sculptured, dissected, and exposed Navaho sandstone. The area where these merge between Deer Range and Rock Springs Bench is a highly scenic complex and colorful landscape.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Vermillion Cliffs with its associated Wingate Sandstone cliffs, colorful Chinle badlands, and canyons with there multiple colors and the intensity of coloration contribute to high scenic quality. Included in this landscape are Hackberry Canyon, Paria River Valley, Hogeye Canyon, the Pilot Ridge-Starlight Canyon-Kirbys Point area and Eight Mile Pass.

Location: Paria-Hackberry WSA.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An area of high scenic value include the breaks of the Rush Beds and the west wall of Cottonwood Canyon, upper tributaries to Hackberry Canyon, Death Valley Draw, and the exceptional Navajo Sandstone domes and fin formations on either side of lower Hackberry Canyon.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Four ONA's designated to preserve "unique scenic values and natural wonders". North Escalante Canyon (5,800 acres), The Gulch (3,430), Escalante Canyons (480 acres), Phipps-Death Hollow (12 more outside WSA)

Location: North Escalante Canyons WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Location: North Escalante Canyons/The Gulch ISA

Description: This area is geologically complex and has some of the most outstanding canyon scenery in the country. Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: A unique feature of the Burning Hills is the red coloration in the landscape is the result of geological changes attributed to the naturally occurring coal fires. The coloration creates a highly scenic area.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The White Cliffs are high white or yellow cliffs of Navajo Sandstone. Vary in height from 600' at Deer Springs Point bench to 1,200' at Deer Springs Point and the Sheep Creek Bull Valley Gorge-Paria River confluence. The cliffs consistently reach a 1000' in height and the cliffline is interrupted by 8 canyons.

Location: Paria-Hackberry WSA

Source: <u>Utah BLM Statewide Final Wilderness EIS</u>, 1990

Description: This area contains twenty-four undeveloped springs. Ten are located in upper Paria, 6 in hackberry, 5 on theeastern border of Cottonwood Creek, and 3 on west boundary. There are also 6 developed springs. These are significant features in this arid environment.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Phipps-Death Hollow ONA (12/23/370) contains 34.288 acres managed to preserve scenic values and natural wonders.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Arches. Peek-a-boo Rock, Wahweap Window, Jacob Hamblin Arch, Starlight Arch, Cobra Arch, Sam Pollack Arch, Woolsey Arch, and several more unnamed arches and natural bridges.

Location: Kaiparowits Plateau and adjacent areas

Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah.

Description: Sand-calcite crystals from the Morrison Formation. These crystals are the first reported occurrence from rocks of Jurassic age and only reported sand crystals in southern Utah.

DOI-2019-06 01981

Location: Kaiparowits Plateau

Source: Sargent, K.A., <u>Environmental Geologic Studies of the Kaiparowits Coal-Basin</u>, <u>Utah</u>. p. 18

Description: Circle Cliffs in the northeast portion of WSA features intensively colored red, orange, and purple Chinle mounds and ledges at the base of Wingate Sandstone cliffs. Vertically jointed cliffs banded with red, yellow, and white colors and bench tops and upper cliff faces possess innumerable orange-red Kayenta Sandstone knobs. One of most spectacular and distinctive landscapes on the Colorado Plateau.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Area includes Escalante Natural Bridge (130' high, 100 ' span) and 4 other natural bridges and arches.

Location: Phipps-Death Hollow WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Gulch is a major geologic feature. Deeply entrenched very sheer red straight line Wingate Sandstone walls. High ridges and slickrock peaks. Ridges drop fairly abruptly to canyons below.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Lamanite Natural Bridge. Actually a large arch with good symmetry and form. Located in an impressive setting in a deep side canyon to The Gulch.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness ETS, 1990

Description: Petrified wood. Upper Gulch-Circle Cliffs contains large, unbroken logs of petrified wood (NEA 2,213 acres). Maximum log length 36'. The scenic values of these logs is enhanced by their colorful surroundings.

Location: Steep Creek WSA

Source: <u>Utah Statewide Wilderness EIS</u>, 1990 W FEIS 3B 19, and Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. p.13.

Description: Outstanding scenic values include the upper portion of Paradise Canyon where sandstone in the Wahweap Formation outcrops as colorful walls and cliffs. Ponderosa pine growing in the sandstone enhance the scenic values. Two sandstone monoliths or fins above Alvey Wash are prominent geological features.

Location: Death Ridge WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The area contains a unique canyon and bench system. The entire ISA contains outstanding scenery. Examples include the area east of Horse Canyon. Four canyons have isolated 10 benches of varying size. Many bench tops have

DOI-2019-06 01982 Page 5 intricate pattern of innumerable e orange-red Kayenta Sandstone knobs. Wolverine Canyon and Death Hollow have extremely narrow and convoluted sections. Another feature, Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.

Location: North Escalante Canyons/The Gulch ISA

Source: <u>Utah BLM Statewide Final Wilderness EIS</u>, 1990

Description: Mollie's Nipple, an erosional remnant is a major landmark in the area.

Location: Kaiparowits Plateau.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Natural Arches. Sam Pollock Arch. located at the head of a tributary drainage of Hackberry Canyon, and Starlight Arch located west of No Man's Mesa.

Location: Paria-Hackberry WSA

Source: <u>Utah BLM Statewide Final Wilderness EIS</u>, 1990

Description: Area of diverse geology represented by spectacular deep canyons. The Escalante River canyon is 1100 feet deep. The canyon walls are rough and broken and the canyon is narrow and it meanders. Pure white to golden sandstone has been eroded into expanses of slickrock. Death Hollow Canyon is 1,000' feet deep and meandering. The extensive upper basin through which Mamie Creek flows is a extremely dissected area of canyons, tanks, other formations. Red layers of Carmel Formation cap high mesas and ledges of the exposed Kayenta Formation.

Location: Phipps-Death Hollow ISA

Source: <u>Utah BLM Statewide Final Wilderness EIS</u>, 1990

Description: Petrified wood deposits just west of the Old Paria Townsite and in Hackberry Canyon. Both are in the Chinle formation.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: All the topographic features of the Kaiparowits region have been developed in sedimentary rocks. The Kaiparowits Plateau is a slightly tilted sedimentary mass that extends as a narrow mesa from the High Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier of the Table Cliff Plateau; the Paria Plateau is a huge blick of sandstone, the Waterpocket monicline is a ridge of folded rock intricately dissected and flanked by hogbacks, and the broken 'comb' in the vicinity of Paria is the edge of sandstone beds uptoruned in the East Kaibab fold. The Circle Cliffs are inward-facing walls of sandstone that rim an oval depression. These prominent features are but large-scale examples of the mesas, buttes, and ridges that characterize the landscape of southern Utah.

Location: Kaparowits Plateau region

Source: Gregory, H.E. and Moore, R. C. The Kaiparowits Region: A Geographic and Geologic Reconnaissance of Parst of Utah and Arizona. 1931.

Description: Paria River from Colorado River to its source, identified by NPS as

possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System.

Location: Paria-hackberry WSA

Source: <u>Utah BLM Statewide Final Wilderness EIS</u>, 1990

Description: Escalante River from Lake Powell to its source, a section of 14.9 miles, was designated as for study as a candidate Wild and Scenic River by the Secretary of the Interior on 10/11/70.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Lower Calf Creek Falls. Calf Creek Canyon is characterized by red alcoved walls, 2 waterfalls, and extensive expanses of white slickrock. Lower Calf Creek Falls drops 126' and Upper Calf Creek's drop is 86'. High educational values associated with interpretation of these areas.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The area contains 40 miles of perennial streams, a significant feature in this arid environment.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Objects of Paleontologic Interest, August, 1996

Description: Fossil assemblage photographs. Typical mollusks from Tropic Shale, south of Escalante include straight cone edphalopods, ammonites, gastropods, and pelecypods and Cretaceous sharks teeth from the Straight Cliffs Formation.

Location: Kaiparowits Plateau

Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. pp 14-15

Description: Gray Cliffs/Pink Cliffs - This sequence of rocks may contain one of the best and most continuous records of Late Cretaceous terrestrial life in the world. Formation has yielded early mammals, lizards, dinosaurs, crocodillians, turtles, mollusks.

Location: Kaiparowits - The Blues WSA

Source: BLM, Escalante/Kanab RMP - Grand Staircase Ecosystem Analysis, 1994

Description: Fossils deemed by the Museum of Northern Arizona in a 1976 study to be of major importance. They are found in the Cretaceous Wahweap Formation outcrops include abundant fragments of turtle shells and dinosaurs, as well as several crocodile teeth. There is an excellent chance that mammal fossils will be found

Location: Kaiparowits Plateau - Nipple Bench unit

Source: BLM, Kaiparowits power project environmental impact statement, 1976

Description: The Straight Cliffs Formation is limited to the southern Utah area. It contains primitive mammals including one of the potentially oldest marsupial fossils identified.

Location: Kaiparowits Plateau

Source: BLM, Warm Springs Project Preliminary Draft EIS, 1996

Description: Invertebrate and vertebrate specimens found Straight Cliffs, Tropic Shale, and Dakota Formations. 13 collection sites recorded (gastropods, cephalopods in upper Cretaceous Formations, vertebrate in Dakota and Tropic Shales). Likely to occur along entire length of the Straight Cliffs

Location: Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Kaiparowits is of interest in understanding the evolution of mammals and other terrestrial vertebrates. Very little is known of Cretaceous mammals prior to the latest part of that period. The mid-Cretaceous mammalian twilight zone is spanned by the fossiliferous, terrestrial roc; units of the Kaiparowits region. They contain unique evidence bearing on the early diversification of important mammalian groups of the Late Cretaceous. The thickness, continuity, and broad temporal distribution of the Kaiparowits sequence provides the opportunity to document changes in terrestrial vertebrate assemblages over a wide span of Late Cretaceous time.

Location: Kaiparowits Plateau

Source: Eaton, Jeffrey G, and Cifelli, Richard L. <u>Preliminary report on Late Cretaceous mammals of the Kaiparowits Plateau, southern Utah</u>, 1988

Description: Extremely significant fossils including marine and brackish water mollusks, turtles, crocodillians, lizards, dinosaurs, fishes, and mammals have been recovered from the Dakota formation, Tropic shale, Straight Cliffs Formation. (Tibbet Canyon, Smoky Hollow, and John Henry members), and Wahweap formation in the area around the proposed Andelex mine and some localities lie directly along the proposed haul routes. This sequence of rocks (including the overlying Wahweap and Kaiparowits formations) contain perhaps the best and most continuous record of Late Cretaceous terrestrial life in the world

Location: Kaiparowits Plateau

Source: Eaton, Jeffrey G., Personal correspondence to Mr. Mike Noel, BLM, 1991

Objects of Prehistoric Interest

Description: Sixty sites have been recorded and the potential for additional sites is exceptionally high. Sites discovered to date include lithic scatters, 13 rockshelters (some w/storage cists and rock art), 1 pithouse village site and 1 structure (probably of Anasazi origin). Some of the rock art and rock shelter and 1 campsite are potentially eligible for nomination to the NRHP.

Location: North Escalante Canyons/The Gulch ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Friendship Cove Pictograph site nominated to NRHP. This site consists of a set of large Fremont style pictographs painted on the face of a large sandstone cliff.

Location: Phipps-Death Hollow ISA, eastern part

Source: <u>Utah BLM Statewide Final Wilderness EIS</u>, 1990

Description: Forty-four sites of diverse types have been recorded in the area. 14 rock art (petroglyph and pictographs sites (2 from Fremont culture), 1 Pithouse village site, lithic scatters of Paiute and Anasazi, and 6 rockshelters have been discovered. Potential for more sites is good.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Situated at the intersection of three major prehistoric cultures the Plateau has long been a magnet for archeological study. It has been recognized that the Kaiparowits Plateau might contain important clues that would aid in answering questions in the archeology of the Southwest.

Location: Kaiparowits Plateau

Source: Utah Wilderness Coalition. Wilderness at the Edge. p. 147 and Lister, Florence C., Kaiparowits Plateau and Glen Canyon prehistory, an interpretation based on ceramics, 1964

Description: Fiftymile Mountain Archeological District contains more than 400 sites including Anasazi habitations and granaries. Important scientific value. Some of the most significant cultural resources in the Four Corners area. Archaeological District (47,325 acre) has been nominated to NRHP. Majority of sites are masonry structures (of 1-10 rooms). Most are of Virgin Anasazi origin but include sites attributed to Fremont, Hopi, and Paiute. Navaho are also expected of occupying the area. 4,000 total sites may be located in WSA.

Location: Fiftymile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Sixty-five sites have been recorded. They include lithic and ceramic scatters, masonry structures (granaries and storage cists), one rock shelter. Masonry and some lithic/ceramic associated with Virgin Anasazi/Virgin-Kayenta Anasazi. Two are Pueblo II-III time period. Some sites are associated with Paiute-age or Archaic-age peoples. At least 8 sites in this area are eligible for nomination to the NRHP.

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: High concentration of prehistoric sites. Although surveys are incomplete for the Warm Creek unit more that 600 sites have been found ranging from lithic scatters and campsites to rockshelters.

Location: Kaiparowits Plateau/Warm Creek unit.

Source: BLM, Kaiparowits power project environmental impact statement, 1976

Description: Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high.

Location: Kaiparowits Plateau/Squaw Canyon unit

Source: ERT, 1980, Kaiparowits coal development and transportation study, final report

Description: Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasozi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters.

Location: Kaiparowits Plateau/Nipple Bench unit

Source: Fish, Paul, Preliminary Report Kaiparowits Power Project

Description: Six sites have been recorded. One is Pueblo II Anasazi occupation site, with others unidentified.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: One hundred-five sites (primarily lithic scatters) have been recorded covering a broad period of occupation. Ten rockshelters w/storage cists or storage caches, 1 w/masonry room, 3 w/granaries associated with Anasazi or Fremont have been discovered. Additional sites include petroglyph and pictograph panels associated with shelter sites and 1 burial site.

Location: Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: One hundred thirty-four documented sites represent virtually all known prehistoric cultures in southern UT (Archaic, Fremont, Anasazi, Southern Paiute). 8,000 years of prehistory are represented. The sites primarily represent temporary habitation by hunter gatherers.

Location: Death Ridge WSA

Source: BLM Utah Statewide Wilderness EIS, 1990, and Hauck, F.R., Cultural Resource Evaluation of South-Central Utah, 1977-1978

Description: The area contains 41 recorded sites and based on surveys may contain exceptionally high densities of sites. Known sites include rockshelters, pit houses, lithic scatters, and masonry structures. Pictograph panels are in Deer Creek Canyon and petroglyphs are found in Snake Creek Canyon.

A study located and estimated 612 sites per 23,000 acres, 564 potentially eligible for nomination to the NRHP (southern border of WSA). Another inventory estimated 360 sites per 23,000 acres at the northern border of the WSA.

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Kayenta Pueblo culture inhabiting the Straight Cliff and portions of the Escalante River drainage between A.D. 1000 and 1200 were likely in contact with the Fremont culture. Although both inhabited the area at the same time and competed for limited agricutural lands there is no evidence of open conflict during this time. Some modifications of pottery making techniques between the two cultures indicates that there was trade and exchange between them. Little is known positively about the Kayenta culture, and additional research in this area could provide valuable inshight on ineractions between the two cultures.

Location: Straingt Cliffs WSA

Source: Lister, Kaiparowits Plateau and Clen Canyon Prehistory: An interpretation based on ceramics. 1964.

Objects of Historic Interest

Description: Dance Hall Rock/Hole-in-the-Rock Trail. While the Hole-in-the-Rock Trail was under construction in 1879, Mormon Pioneers camped at Fortymile Spring and held meetings and dances in the shelter of Dance Hall Rock. Designated historical site by DOI 1970.

Location: Two miles west of the Glen Canyon NRA on the Hole in the Rock Trail

Source: Utah Wilderness Coalition. Wilderness at the Edge. .- p. 182

Description: Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah.

Location: Historic trail running from Escalante to Hole in the Rock in Glen Canyon NRA

Source: Lambrechtse, Rudi. Hiking the Escalante, 1985

Description: Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. Nominated to NRHP. Popular backpacking route.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Boynton Road. Constructed 1909 as short cut between Escalante and Salt Gulch. Abandoned after 2 years because of flooding. Visible over approx 9 of its 10 miles.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Escalante-Boulder telephone line: First Boulder-Escalante telephone line constructed by Forest Service in 1911 providing first phone service to area. Still visible between Antone Flat and Sand Creek.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Washington Phipps grave. A historical grave site of an early pioneer shot in 1878 in a dispute with his partner John Boynton. Provided the namesake for the area.

Location: Phipps Death Hollow

Source: Lambrechtse, Rudi: Hiking the Escalante, 1985

Description: Old Boulder Road. Main route between Escalante and Boulder until the CCC built Hell's Backbone Road and Highway 12 in 1930's to replace it.

Location: Phipps-Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Hattie Green mine, an early copper working located on the crest of The Cockscomb.

Location: The Cockscomb WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Old Paria Townsite was established in 1874 on the bench above the eastern bank of the Paria River by Mormon settlers who attempted to farm the bottomlands. Site was abandoned in 1890.

Location: adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

Description: Old Paria Townsite movie set. Built in the 1960's to film several movies. Now abandoned but still a popular recreation destination.

Location: adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

Objects of Biological Interest

Description: Riparian zones are corridors for many of the region's species, including neotropical migrant birds. The corridors (including the Escalante, and Paria Rivers and Johnson Creek and their tributaries) bisect the region north to south, allowing for exchange of individuals among different animal populations. The importance of movement corridors to the long term viability of animal populations is of great scientific and management interest. This area would afford many opportunities to enhance this ecological issue.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab including the Escalante, Paria rivers and Johnson Creek

Source: Edwards, Tom, 1996; Knopf, 1985; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; TUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: 25 miles of riparian corridor in unit. Connects mountains to desert lowlands. Has great concentration of hanging gardens and riparian vegetation, including relictual populations in canyon bottoms. Also supports many rock crevice communities. Connects other protected areas. High plant endemism, due to large extent of parent material exposure.

Location: Escalante River

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Source: BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson(et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson. 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Riparian corridor links high country to lowland desert scrub. Connects protected areas. Has high concentrations of isolated communities: hanging garden, rock crevice and canyon bottom communities. Also has an abundance of packrat middens.

Location: Paria River

Source: Van Devender and Spaulding, 1979; BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Fifty miles of perennial streams including the Paria River (which is a wild and scenic river inventory segment). Riparian vegetation covers 500 acres.

Location: Paria-Hackberry WSA -----

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Three major floras meet in this area. Plants from the Mojave, Arizona deserts and northern Utah are all found here, with a few species from the Great Plains. The Colorado Plateau is surrounded by high mountains, isolating the flora and fauna. Unlike many ecosystems, the plant density, diversity and stature within the monument is determined more by substrate than climate. Consequently, isolation, plus the great diversity of substrates (providing a wide range of soil chemistry and physical characteristics) found within close proximity to each other has resulted in a high level of plant endemism in this area. Eleven species found in the monument are found nowhere else in the world. Of plants that occur only in Utah or on the Colorado Plateau, 125 species occur in the monument. The Canyonlands portion of the Colorado Plateau, much of which is contained in the monument, is considered the richest floristic region in the Intermountain West, and contains 50% of Utah's rare and endemic plants. 90% of these rare and endemic species are found on substrates typical of most of the monument. Of the Canyonlands area, the monument area is considered one of the most significant for endemic populations, with more than 10% of the flora being found no nowhere else.

Of additional significance is that many of the plants in the monument are diploid species. This means they represent the basic genetic stock from which polyploid species in the area evolved. This makes this area of great significance to plant evolutionary biologists and provides a unique opportunity to study the evolution and speciation of plant species, as well as the structure and dynamics of plant communities, independent of climate.

Location: Entire monument

Source: Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Dott, 1996; Shreve, 1942; Cronquist et al., 1977; Utah Natural Heritage Program plant database

Description: The Colorado Plateau was uplifted and downcut without deformation. As a consequence, large areas of unmixed geologic parent materials are exposed, and plants must adapt to large array of highly distinct parent materials. These substrates are sharply demarcated, and often occur within a few meters of each other. This situation offers the unique opportunity to examine the role of soil physical and chemical characteristics in determining plant and animal community structure independent of climatic variables, an important ecological question. It also results in different plant community structure and dynamics than is generally observed in other ecosystems. This area contains shales, siltstones, mudstones, sandstones and limestone of differing depths, and deposited in a variety of environments (marine, freshwater and eolian). Each soil depth and depositional environment has very different chemical and physical characteristics. As a result, there is a great diversity of substrates in this area, each supporting a unique plant community.

Location: Entire monument

Source: Hintze, 1988; Nabhen and Wilson, 1996; Gross, 1987; Dott, 1996; Roberts, 1987

Description: The presence of steep elevational gradients gives the opportunity to sort out the role of temperature and precipitation in structuring plant and animal communities. Elevational gradients have traditionally been used by scientists as a way of examining factors controlling biotic community structure. Juxtaposition of diverse substrates and elevational gradients gives an unparalleled opportunity to determine the respective roles of soil chemistry, physical characteristics, elevation, rainfall and temperature in structuring biotic communities. In addition, it allows for high biodiversity in a small area.

Location: Entire monument

Source: Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al., 1975; Hintze, 1988; Dott, 1996; Shreve, 1942; Cronquist et al., 1977

Description: The Escalante Plateau is the home to approximately 300 species of amphibians, birds, mammals, and reptiles. This diverse set of wildlife species includes over 20 species of birds of prey including the bald eagle, peregrine falcon, and was the historical range of the condor. The region contains 2 of the 7 recognized centers of endemism for fishes of the western United States.

Location: Escalante Plateau

Source: Davidson et al. 1996; Tom Edwards, 1996, Behnke, R.J., and Zar, M., 1976

Description: Contains many different geologic substrates (therefore soils with different physical and chemical attributes) in a small area. The majority of endemic in Utah are found on these particular substrates; consequently, this area is expected to have a high concentration of endemics.

Location: Escalante -along boundary of Glen Canyon NRA and Capital Reef National Park

Source: Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988

Description: Large expanses of fine-textured soils (Morrison, Mancos/Tropic) shales support large number of endemic plant species, fossils.

Location: Henrieville to Escalante

Source: Hintze, 1988; Shulz, 1993; BLM Wilderness EIS

Description: An exposed monocline with many soils/substrates in close juxtaposition provides tremendous biodiversity of both general and endemic flora. High salt content of stream provides habitat for salt-tolerated riparian plants. Provides a elevational gradient from ponderosa pine to desert scrub. In addition, the rocky substrate has provided refugia for many Arcto-Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present-day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: The Cockscomb

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996)

Description: Contains a concentration of many different geologic substrates/soils with different physical and chemical attributes. This area has a high concentration of endemics. This boundary also abuts protected areas (Glen Canyon, Capitol Reef), thereby effectively increasing the value of all three areas for biological conservation. In addition, the Waterpocket Fold has isolated two outcrops of the same parent material. These two areas now support different floras. This presents an outstanding scientific opportunity to explore processes of speciation.

Location: Far eastern boundary

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al, 1996; Diamond,

1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: This is an exposed monocline. Consequently, many substrates (Summerville, Morrison, Dakota, Tropic, Entrada, Navajo, Wingate and Carmel) are exposed directly next to each other, providing an opportunity for studies of ecological processes independent of climate. This monocline also has an elevational gradient, facilitating the study of effects of temperature and moisture on community dynamics. In addition, the rocky substrate has provided refugia for many Arcto-Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present-day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: Straight Cliffs area

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978.

Description: Diversity of plant life ranging from low desert shrub to Ponderosa Pine (less that 1 mile apart)enhances the study and observation of ecology. 3 small stands of Ponderosa pine in Alvey Wash.

Location: Death Ridge WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contained within the monument are 3-5 spatially separated areas where the same substrates are exposed in close proximity to each other. In addition, there are 5 elevational gradients along riparian corridors. This is critical for replicated scientific work to be conducted.

Location: Entire monument

Source: Hintze, 1988; USGS Topographical Maps

Description: Riparian corridor with elevational gradient, connecting desert low lands to the high country. Vermillion, White, Pink Cliffs (Triassic, Jurassic, Cretaceous material).

Location: Johnson's Creek

Source: Hintze, 1988; USGS Topographical Maps; Beier, 1993; Noss, 1992, 1993

Description: Fifty Mile Mountain. Presence of aspen on Pleasant Grove, Steer Canyon, and Pinto Mare Canyons.

Location: Fifty Mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Protects lands at low elevation sites frequently rich in species diversity. The range of elevation in these areas from approximately 4500-8300 feet encompasses a wide variation in elevation and will capture the full diversity of plant and animal species in the region.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab

Source: Hintze, 1988; Utah BLM Final Wilderness EIS, 1990

Description: The monument contains an abundance of hanging gardens, tinajas, canyon bottom, dunal pockets, salt-pocket and rock crevice communities. These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals) and soil fauna. Tinajas are important aquatic resources, and contain a diverse array of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat larvae and aquatic/riparian plants. Highly saline areas are found around many seeps and streams, and consist of plants and animals adapted to highly saline conditions. Dunal pockets contain species adapted to shifting sands, while rock crevice communities consist mostly of slow-growing species that can thrive in extremely infertile sites. These communities offer a chance to examine gene flow dynamics, and to distinguish the respective role of pollen versus seeds. They offer an opportunity to study ground water flow dynamics in the absence of significant fluvial processes, and island biogeography of plants, pollinators and ground-dwelling biota. They also are highly simplified, discrete ecosystems, making them ideal for elucidating basic ecosystem processes.

Location: Entire monument

Source: Nabhen and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May et al., 1995; Fowler et al., 1995; Graff, 1988

Description: These canyons provide a high concentration of isolated, unique plant and invertebrate communities: hanging garden, rock crevice, and canyon bottom communities. Many relictual plant species can be found in these communities. Pack rat middens are abundant, providing paleoclimate and paleo-vegetation information.

Location: Escalante Canyons

Source: Axelrod, 1960; BLM Wilderness EIS; Van Devender and Spauling, 1979; Fowler et al., 1995; Nabhen and Wilson, 1996

Description: Dunal pockets contribute Great Plains species to the flora. These are unique, isolated plant communities.

Location: Cockscomb to Kaiparowits -------

Source: Hintze, 1988

Description: Unique, isolated communities are located throughout the monument. These include hanging gardens, tinajas, canyon bottom, dunal pocket, salt pocket and rock crevice communities. They provide great opportunities for examining evolution, gene flow, island biogeography and other ecological principles.

Location: Entire monument

Source: Case and Cody, 1988; Diamond, 1981; Dott, 1996; Harris, 1984; Ludwig and Whitford, 1981; Fowler et al., 1995; Nabhen and Wilson, 1996; Roberts, 1987; Reice, 1994; Axelrod, 1960

Description: Biological conservation theory and literature suggests that large contiguous conservation areas increase both extent and probability of population survival, increases protection of migratory pathways, and is the most effective means of conserving aquatic and riparian communities.

Location: Entire monument

Source: Soule, 1987; Davidson et al., 1996; Miller, 1961; Minckley and Deacon, 1968; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: The connection with Glen Canyon provides a larger protected area. It also provides low desert vegetation as part of the vegetational gradients. Large areas are important for maintaining the evolutionary potential of plants and animals, allowing for the exchange of genetic material among the separate populations that constitute a population.

Location: Common boundaries and riparian connections with Glen Canyon NRA, Capitol Reef NP, Box Hollow Wilderness and Paria Wilderness

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Cryptobiotic soil crusts are critical for soil stability, nutrient availability for vascular plants and normal soil surface temperatures. These crusts are extremely fragile and easily disrupted by soil surface disturbances such as trampling or off-road vehicles. Since the soils in the monument are highly susceptible to erosion, it is important that these biocrusts be protected so they stabilize these erodible soil surfaces. In addition, these ecosystems have few nitrogen-fixing plants. Since these crusts provide nitrogen to these soils, they are a critical part of these nitrogen-limited ecosystems.

Location: Entire monument

Source: Belnap, 1994, 1995; Belnap and Harper, 1995; Belnap et al., 1994; Jefferies, 1989; Harper and Marble, 1988; Johansen, 1993; Mack and Thompson, 1978; Fleischner, 1994

Description: Disturbance of most soil surfaces in the monument area will result in soil surface temperature changes, as bio-crusted surfaces are darker than the substrates underneath them. The expected lowering of temperature with disturbance would result in cooler soil temperatures, and thus later spring plant germination and lower nutrient uptake rates. This may adversely effect desert plant growth in early spring. Surface temperatures also influence foraging and burrowing patterns for many soil invertebrates, and many effect community dynamics of these species.

Location: Entire monument

Source: Ludwig and Whitford 1981; Belnap 1995

Description: Ecosystems in this area are some of the most stable documented to date, as both large and small scale disturbances are limited spatially and temporally. Very little of this area was glaciated in the Pleistocene. Most plant communities evolved without fire or grazing by large ungulate herds, as evidenced by characteristics of the soils and the flora. Catastrophic events are minimal, with the exception of wash bottoms. Microsite disturbances are minimal as well, as most soils support very low populations of invertebrates. 1880

photos repeated in 1990 show many sites virtually unchanged, with the same tree, shrub and grass individuals present, indicating very low species turnover rates in this region relative to other ecosystems. In addition, dead tree branches can still be found in virtually the same condition as they were 100 years ago, indicating plant tissue decomposition rates are extremely low in this region. This makes this area highly unique, as most ecosystems are believed to be structured disturbance. In this region, ecological processes can be studied independent of the effects of disturbance to give us greater insight into their functioning (i.e. factors controlling exotic plant invasions, species-species interactions, etc.)

Soil physical, chemical and biological features appear to be both easily damaged (low resistance) by surface disturbance and have very slow recovery rates (low resilience) when compared to other deserts or more mesic systems. This may be a result of evolution of this ecosystem evolving in the relative absence of disturbance (Belnap 1995, 1996). Therefore, this area is important in the study of how disturbance influences community dynamics, including species-species interactions, and for understanding how to restore these fragile systems. This also means that this area is highly susceptible to damage by different land uses, including recreation and grazing.

Location: Entire monument

Source: Belnap, 1995, 1996; Belnap et al., 1994; Mack and Thompson, 1982; Fleischner, 1994; Kleiner and Harper 1972; Harper et al., 1994; Webb, 1994; Rogers, 1982; Pickett and White, 1985; Moldenke, 1995; Evans and Ehleringer, 1993; Turner et al. 1993; Iverson et al. 1981; Webb and Wilshire 1981; Larsen 1996; Bowers et al. 1994

Description: Isolation of this area has resulted in minimal human impacts. Many of the ecosystems found in this area have received little, if any, human use and the type and extent of disturbance has that has occurred is known. In addition, there are large areas unbroken by roads. This is essential to the protection and conservation of plant and animal species.

Location: Entire monument

Source: Wilcox et al 1986; Wilcox and Murphy 1985; Mader et al., 1990; Osley, et al., 1974; Rost and Bailey, 1979; Witmer and Calesta, 1985

Description: The monument lacks any areas that have been invaded to any large extent by exotic species. There are few such areas in the Intermountain West, and they can provide invaluable information in understanding the ecology and dynamics of exotic plant invasion. These areas aid scientists in understanding what makes systems resistant to such invasions, and thus help land managers predict what areas are susceptible to invasion and restore already-invaded regions.

Location: Entire monument

Source: Billings, 1994; Fleischner, 1994; Forcella and Harvey, 1983; Gross, 1987; Hunter, 1990; Loope et al., 1988; MacMahon, 1987; Pellant and Hall, 1994

Description: Six threatened or endangered candidate species are located within or near this area.

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contains Peregrine falcon (endangered) and 6 special status animal species and 5 special status plant species.

Location: Mud Spring WSA

Source: <u>Utah BLM Statewide Final Wilderness EIS</u>, 1990

Description: Habitat for Swainson's hawk, golden eagle (Sensitive) and peregrine falcon (endangered). - - - - - - - - - .

Location: The Blues WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Peregrine falcon and bald eagle (endangered). 8 animal and 5 plant species of special status. - - - - - - - - - - - - -

Location: Paria-Hackberry and Cockscomb WSA and Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Thirteen species of raptors are known or suspected of nesting in

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Relict plant community in the upper part of Dry Valley *probably possesses important scientific values

Location: Mud Spring Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique relict plant community of pinion-juniper and sagebrush-grass park vegetation accessible only by a steep trail. One of the few remaining unaltered plant communities in Utah. No Man's Mesa RNA was designated as an ACEC in 1986. Such areas are invaluable to science. They provide restoration and management goals for administration of lands. Such areas are also critical to scientists who are trying to understand the natural functioning of ecosystems. Grasslands are especially valuable, as almost all have been heavily grazed for over a century.

Location: Paria-Hackberry WSA (No Man's Mesa and Little No Man's Mesa)

Source: Utah BLM Statewide Final Wilderness EIS, 1990 and Kleiner and Harper,

Description: Four Mile Bench Old Tree Area. Unique area of extremely old (1,400 years) pinon and juniper trees. Unique scientific values on over 1,000 acres. The state of the s

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: This region is at the northern end of areas that receive summer monsoonal rains, and is at the southern end of areas that depends on winter rains. This distinction is very important to the physiological functioning of plants in this moisture-limited areas, as even minor changes in temperature and/or rainfall may lead to major differences in water availability, and consequently, plant metabolic processes. Climate change is expected to alter both rainfall timing and amount, as well as temperature. This, in turn, would alter plant physiology, water use patterns and community composition in this

region, making the monument an excellent place for studying global climate change.

Location: Entire monument

Sources: Ayyad 1981; Graff 1988; Van Devender and Spaulding 1979; Wagner 1981

Description: Unlike most deserts that are primarily depositional environments, the CP is an erosional one (Welsh 1979; Nat Hist). This contributes to high endemism, as substrate material is not mixed. In addition, it makes this region highly susceptible to soil loss when surfaces are disturbed. This soil loss has a negative impact on plant and aquatic communities, as well as dam sediment loads.

Location: Entire monument

Source: Welsh, 1979; Harper et al., 1994

Description: The effects of scaling up and down are not known for many ecological processes. The multitude of variably sized, discrete watersheds found in this area offer a unique opportunity to test the effects of scaling for hydrological and biological processes. In addition, the close spacing of these watersheds offers a chance to separate the effects of area per se from other environmental factors on community structure.

Location: Entire monument

Source: Allen and Hoekstra 1987; Reice 1994; Pickett and White 1985; Rosenweig

Description: Semi-arid and arid lands of the western United States are highly susceptible to desertification. The lack of natural disturbance in much of this area offers the opportunity to study the effects of different types and levels of land use and to better understand the steps leading to desertification.

Location: Entire monument # - - - - - - - - - - - - - - - - - -

Source: Dregne, 1983

Description: This area contains few exotic plants. Having this resource gives the opportunity to better understand what factors inhibit or facilitate exotic plant invasions. Roads have been heavily implicated in facilitating exotic plant invasion, while intact Cryptobiotic soil crusts and less favorable soil chemistry may inhibit such an invasion. Invasion could fundamentally alter these communities, by altering species composition, community dynamics and fire cycles:

Location: Entire monument

Source: Monsen and Kitchen, 1994; Kelly 1996; Harper and Marble 1988; Davidson et al. 1996

Description: Quaternary resources are abundant in the monument. Pack rat middens enable reconstruction of paleoclimates and paleo-vegetation, while Pleistocene animal remains found in alcoves.

Location: Entire monument

Source: Harper et al., 1994

Description: Unlike more mesic ecosystems, there is little evidence that desert communities demonstrate traditional successional sequences. There is little or

no modification of soils or other site characteristics by previous-occurring plants. Understanding of this is important for restoration efforts. The monument offers an excellent opportunity to study this phenomenon independent of climate and disturbance factors.

Location: Entire monument

Source: Barbour, 1981; MacMahon, 1987; Shreve, 1942; Dott, 1996

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 7 plant and 9 animal species considered sensitive.

Location: Death Ridge and Fifty Mile Mountain WSAs

Source: <u>Utah Statewide Wilderness Study Report</u>, 1991

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 8 plant and 7 animal species considered sensitive.

Location: Phipps Death Hollow ISA and Steep Creek WSA

Source: Utah Statewide Wilderness Study Report, 1991

Description: Peregrine falcon and Bald Eagle use these areas. Areas are habitat for 9 plant and 7 animal species considered sensitive.

Location: North Escalante Canyon, The Gulch and Carcass Canyon WSAs

Source: Utah Statewide Wilderness Study Report, 1991